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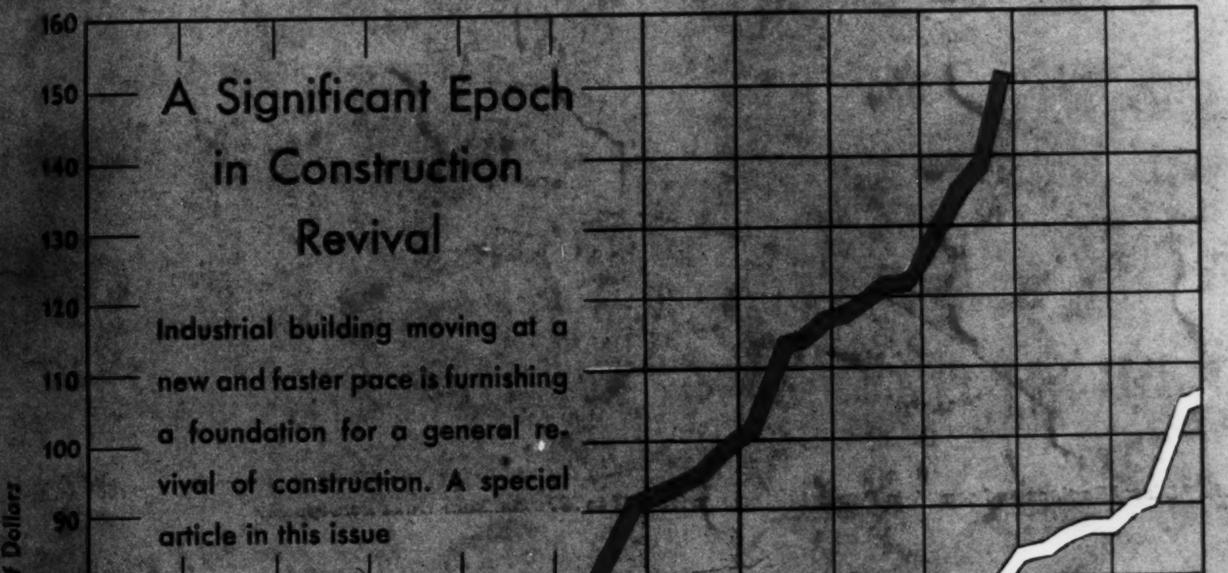

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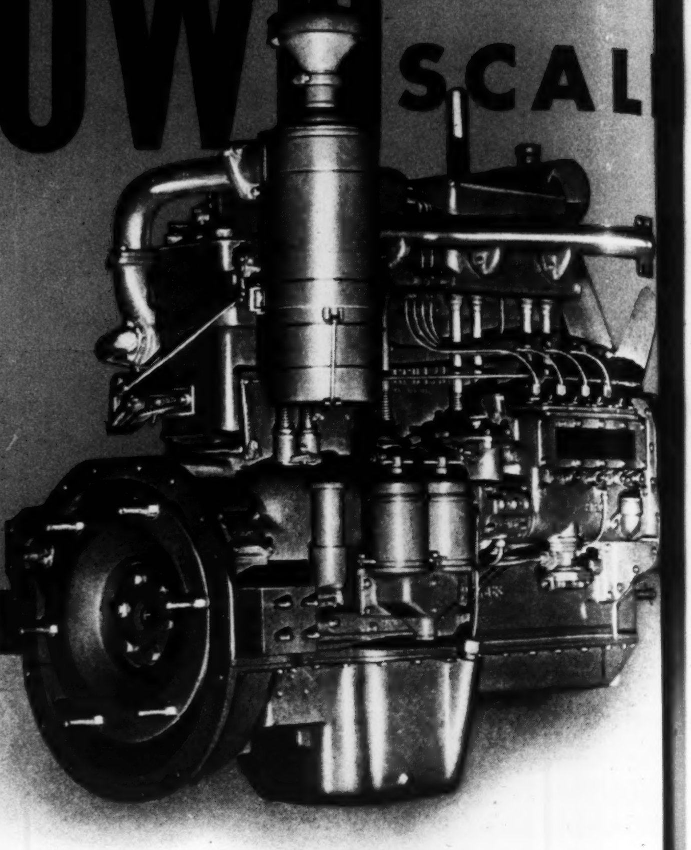

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A MOMENT WITH THE PUBLISHERS

Merchandising, *Vital to Production*

IT IS common knowledge, especially amongst engineers, that the astounding increase in human productivity during the last century has made possible our conquest of scarcity and that our failure to use it wisely is responsible for the periodic economic dislocations that cause such widespread distress. We know also that we dare not seek to avert those dislocations by throttling our productivity unless we are willing to pay for the relief with a permanent sacrifice of our living standards. In other words, most of us see clearly the necessity for more abundant and more efficient production as the first essential of sustained economic and social progress.

It is remarkable, however, that so many who see this clearly do not see that merchandising is an equally indispensable function. Especially among technical men we often find a tendency to esteem merchandising as of dubious economic value, if not actually, in some degree, an economic waste.

SUCH an appraisal forgets that all business and industry is but an exchange of services, either as such or in the form of commodities. Once all these services were simple because men's wants were simple; it required the full productive capacity of an individual to acquire even the bare necessities of life, and everyone knew what those necessities were and where he could acquire them.

Today, with the expansion of human productivity through power and machinery, man can produce with much less labor and during much shorter working hours a vastly increased supply of services, commodities or any other form of wealth. His greater productivity endows him, therefore, with a greater command over the goods and services that are produced by his fellowmen; thereby he is able to gratify his desire for greater comfort, convenience and luxury.

But if each is to find a market for what he produces and at the same time find what he wants in exchange for it, we must have some means by which to exchange information as to what we have and what we need and to stimulate desire in both directions. This is the merchandising function; it embraces selling, sales promotion, advertising and kindred activities. It is the indispensable adjunct to greater productivity if we are to benefit by the new powers that science and technology have given to us.

Before we can hope to exchange goods and services we first must exchange ideas concerning them; as we increase the volume and diversity of our products we must increase proportionately the range and speed with which we exchange those ideas. In this day of high productivity we cannot imagine modern industry without merchandising any more than we could imagine it without the institution of credit, designed to multiply the exchange power of our currency.

Moreover, the constant release of men from the job of producing commodities, makes them available for the performance of a host of new services, ranging from the hotel bellhop to the university professor and from the artist in the studio or conservatory to the surgeon in his operating room. Many, thus released from the production of commodities, are required in this vital function of exchanging them more effectively.

EVERY industry develops its own particular distribution problems; the construction industry presents some of the most complex. It is composed of a very large number of relatively small and widely scattered producers such as engineers, architects, contractors, manufacturers and many more. Each of these, moreover, produces and requires a vast variety of materials, services, machinery and equipment. The salesman, the dealer, the distributor, the advertising writer and medium all become, therefore, of primary importance. Only as we use the services of all these in wise coordination can we maintain the swift and far-ranging exchange of ideas concerning our products that is required to put them to use. And only as we do that can we put to most effective use the powers that modern science has bestowed on each of us.

Every man engaged in any department of this vast industry constantly needs and benefits by the distribution agencies that have grown up to serve it; each owes it to himself to know how it functions, how to use it intelligently and how to appraise justly the service it renders to him.

Willard Chevalier

ENGINEERING NEWS-RECORD

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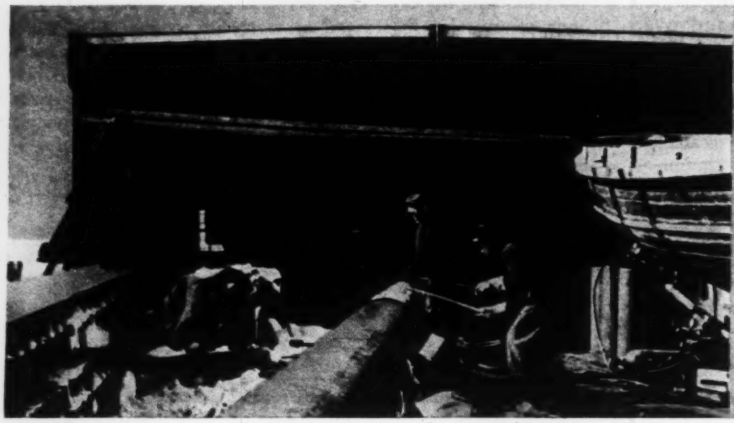

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In the News:

Until Maine sets up a body to develop a market for Passamaquoddy power the federal government is not going to let contracts for any major part of the tidal-power scheme, according to a report from Washington. Work on the project is to be confined to preliminaries such as camp construction, housing, etc., under a reduced allotment of $5,000,000.

Governor Hoffman of New Jersey signed a measure repealing the state sales tax with red ink as a warning that danger lies ahead for state revenues. The red ink is also a warning that gasoline-tax funds are in danger of being diverted from roadbuilding service to make up the loss.

Maryland dedicated its longest bridge last week. Located at Cambridge, it extends for 8,700 ft. across the Choptank River, largely as trestle but with a draw-span for river traffic. President Roosevelt, aboard the "Sequoia," was the first to pass through.

The Deadline for putting 3,500,000 men to work with the relief-works funds has been moved ahead from Nov. 1 to Dec. 1.

Cooperation between the National Council of State Boards of Engineering Examiners and the Engineers' Council for Professional Development was pledged by the former organization at its annual meeting last week.

WPA Will Not Act on the Army Engineer recommendation for federal financing of New York State flood control made following the recent disastrous floods.

The RFC Will Finance a new research laboratory for New York University. The three-story building, to cost $400,000, will house material-testing and hydraulic laboratories as well as a meteorological station, wherein resides the federal interest.

The First Rural Electrification Administration allotment goes to the Imperial Irrigation District of California for 500 miles of transmission lines. Eleven projects in seven states will shortly be announced by REA, according to current reports.

PWA Has Made a Profit of $2,520,567 on its bond sales of $151,334,562 of municipals and $67,776,500 of railroads. It has disposed of 60 per cent of the municipals and 40 per cent of the railroads in its portfolio.

Army Engineer allotments that cannot be spent by July 1, 1936, are being reduced. Large reductions last week include $2,000,000 for the upper Mississippi River works, $5,000,000 for Passamaquoddy, $2,000,000 for Conchas Dam in New Mexico, $4,000,000 for Los Angeles flood control, and $500,000 for Missouri River work between Kansas City and Sioux City.

In This Issue:

The Central Anchorage between the two suspension bridges of the new San Francisco Bay crossing is a unique structure. A vertical concrete cantilever 500 ft. high, it is designed to resist any unbalanced pull from the opposing cables and in addition to withstand an earthquake force equal to one-tenth of its weight. Messrs. Purcell, Andrew and Woodruff make it the subject of their latest article in the series on the San Francisco-Oakland Bridge.

Current Construction in England as seen by Robert F. Legget, *ENR* Canadian correspondent, on a recent trip is reported in this issue. Mersey Tunnel operation, Waterloo Bridge demolition and Liverpool Cathedral construction are among the items covered.

Aerodynamics and the Civil Engineer, the subject of the signficant series of articles prepared by W. Watters Pagan, is brought down to definite design recommendations in the concluding article in this issue.

A Dam Failure in Italy in August caused a flood that took a toll of 100 lives and destroyed the power plant near the town of Molare. The causes of the failure are discussed by E. Probst, former editor of *Bauingenieur,* who visited the site.

Massachusetts is setting out to build 500 to 1,000 miles of sidewalk along its state highways. This pioneer attempt to build safety into the nation's roads is a significant development.

Construction has more cause to regard the future with optimism than for some time past. Disregarding 75 per cent of the WPA allotments, there is still left twice as much new capital for construction as was available at this time last year. Best of all, private capital is going into new plant at an accelerated pace. A special article depicts the most promising statistical picture in five years.

Coming Articles:

Minneapolis and St. Paul are engaged in a great sewerage program to clean up the Mississippi River. Much of the 35 miles of tunnels that are required traverse a sandstone rock. They are being bored by hydraulic-mining methods involving pulverizing of the rock by air jets and power chisels and mixing the muck with water for handling by centrifugal pumps. This interesting operation will be described in detail next week.

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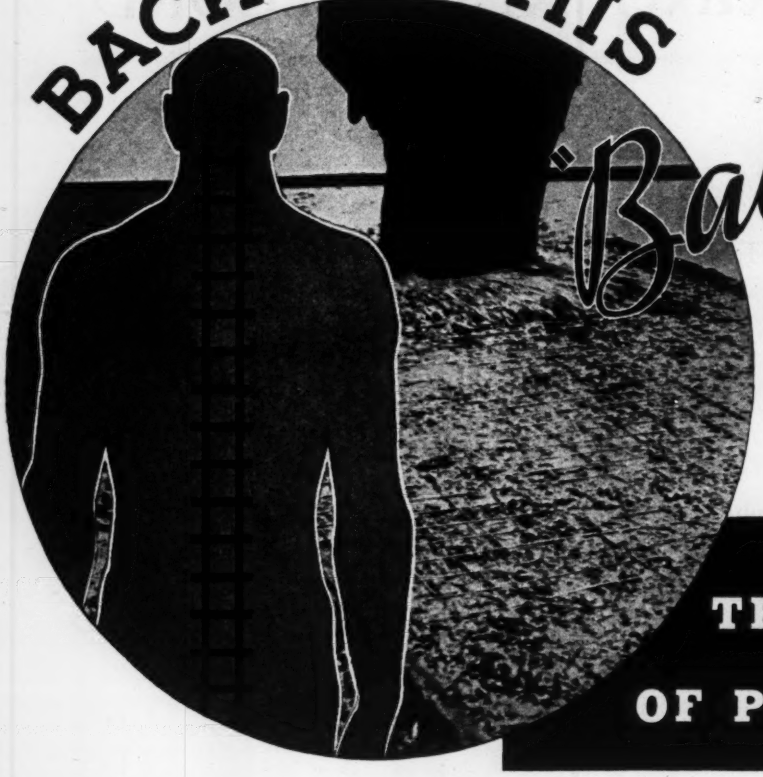

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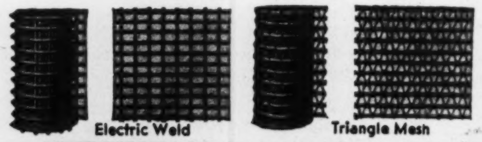

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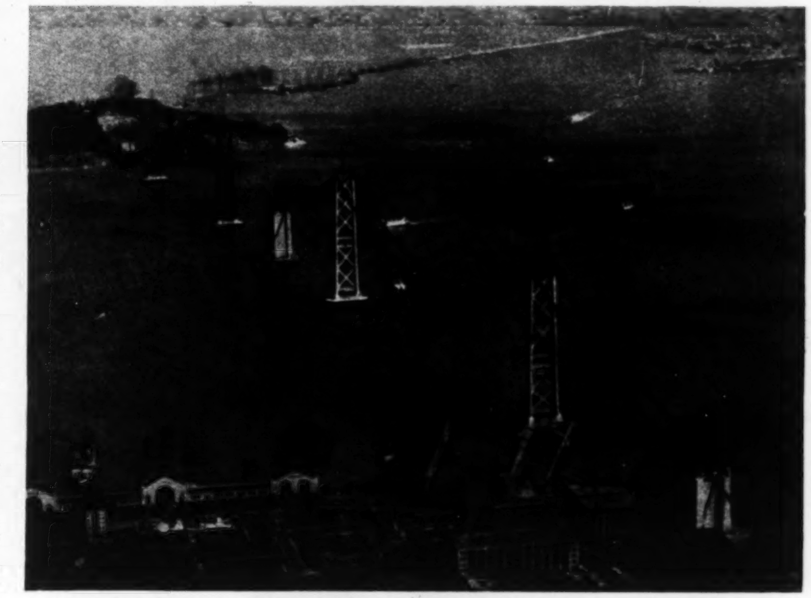


FIG. 1—CABLES BEING STRUNG on the twin suspension bridges of the San Francisco-Oakland Bridge exert their pulls on three anchorages—gravity type in San Francisco, tunnel on Yerba Buena Island, 10,300 ft. distant, and a unique cantilever in the center of the West Bay.

Cable Anchorages San Francisco-Oakland Bridge

The central anchorage common to the twin suspension bridges of the West Bay crossing is a vertical cantilever 500 ft. high—Earthquake allowance 0.1 *g*—Anchorages on land take advantage of rock weight

By C. H. Purcell, Chas. E. Andrew and Glenn B. Woodruff,
Respectively, Chief Engineer, Bridge Engineer and Engineer of Design, San Francisco-Oakland Bay Bridge

THE DECISION to use twin suspension bridges for the West Bay crossing of the San Francisco-Oakland Bridge made it necessary to design a new type of structure—an anchorage at the junction of two long suspension bridges, capable of resisting any unbalance in the pull of the cables which comes to it from opposite directions. The final design involved a cellular structure of concrete, 92x197 ft. in plan, extending 220 ft. below and 280 ft. above water. The lower portion, 245 ft. high from rock to El. +25, is a concrete caisson, and above this a concrete cantilever box-beam extends from the caisson up to cable level.

In principle, the problem was that of providing a cantilever with sufficient strength, weight and size to transfer a horizontal force applied at El. +267 to the rock foundation in such a manner that pressures under the base of the pier are kept within reasonable limits. The main detail problem was in keeping the necessary connections between the cables and the concrete cantilever to a minimum width, since this width determined the distance between trusses for the entire length of the West Bay crossing. It also was desirable that details at this point be such as would facilitate cable-stringing operations.

Central anchorage superstructure

In the adopted design, each cable terminates in a strand shoe assembly which follows usual practice except that, to conserve width, the layout is elongated in a vertical direction. Each pair of strand shoes is connected by two 16x2-in. heat-treated eyebars to a nickel steel A-frame. At times when the loads on the two bridges are equal, the cable pulls are transferred through the plate assembly at the top of the frame without producing stress in the diagonals. Any unbalanced horizontal component is transferred through the diagonals to the A-frame anchorage.

The anchorage of each A-frame consists of a vertical chain, attached to the lower end of each leg, of twelve 14x2-in. eyebars extending 135 ft. downward to an anchorage girder. During construction, wells in which these eyebars later were placed were left in the concrete walls of the center anchorage superstructure. After the concrete bearings for the A-frame had been poured, the

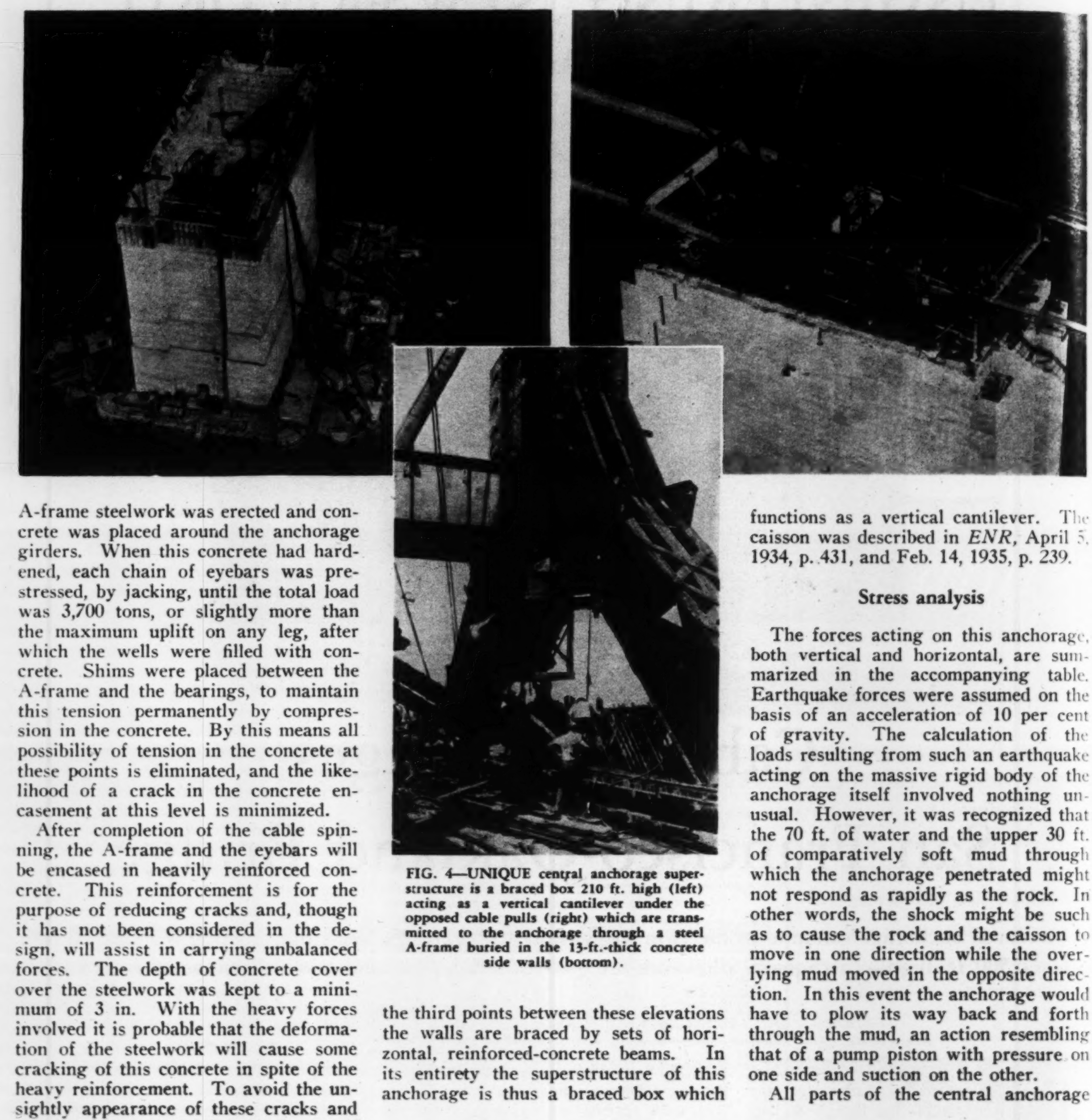


FIG. 4—UNIQUE central anchorage superstructure is a braced box 210 ft. high (left) acting as a vertical cantilever under the opposed cable pulls (right) which are transmitted to the anchorage through a steel A-frame buried in the 13-ft.-thick concrete side walls (bottom).

A-frame steelwork was erected and concrete was placed around the anchorage girders. When this concrete had hardened, each chain of eyebars was prestressed, by jacking, until the total load was 3,700 tons, or slightly more than the maximum uplift on any leg, after which the wells were filled with concrete. Shims were placed between the A-frame and the bearings, to maintain this tension permanently by compression in the concrete. By this means all possibility of tension in the concrete at these points is eliminated, and the likelihood of a crack in the concrete encasement at this level is minimized.

After completion of the cable spinning, the A-frame and the eyebars will be encased in heavily reinforced concrete. This reinforcement is for the purpose of reducing cracks and, though it has not been considered in the design, will assist in carrying unbalanced forces. The depth of concrete cover over the steelwork was kept to a minimum of 3 in. With the heavy forces involved it is probable that the deformation of the steelwork will cause some cracking of this concrete in spite of the heavy reinforcement. To avoid the unsightly appearance of these cracks and to give better protection to the steelwork, each A-frame assembly above the lower deck roadway is being encased in a structural-steel shroud, which is virtually a steel form left in place over the exposed concrete faces.

The longitudinal side walls of the anchorage average 13 ft. in thickness and are designed as vertical cantilever beams to transfer the horizontal forces to the caisson. At the base the walls are reinforced by ninety-eight 1¼-in. square bars. These side walls are connected by the vertical end cross-walls averaging 5 ft. in thickness, and one at the center, 3 ft. thick. At the lower deck level, El. 235, the roadway construction acts as a horizontal diaphragm, and the slab at the top of the caisson, El. 25, acts in a similar capacity. At the third points between these elevations the walls are braced by sets of horizontal, reinforced-concrete beams. In its entirety the superstructure of this anchorage is thus a braced box which functions as a vertical cantilever. The caisson was described in *ENR*, April 5, 1934, p. 431, and Feb. 14, 1935, p. 239.

Stress analysis

The forces acting on this anchorage, both vertical and horizontal, are summarized in the accompanying table. Earthquake forces were assumed on the basis of an acceleration of 10 per cent of gravity. The calculation of the loads resulting from such an earthquake acting on the massive rigid body of the anchorage itself involved nothing unusual. However, it was recognized that the 70 ft. of water and the upper 30 ft. of comparatively soft mud through which the anchorage penetrated might not respond as rapidly as the rock. In other words, the shock might be such as to cause the rock and the caisson to move in one direction while the overlying mud moved in the opposite direction. In this event the anchorage would have to plow its way back and forth through the mud, an action resembling that of a pump piston with pressure on one side and suction on the other.

All parts of the central anchorage

FORCES ACTING ON CENTRAL ANCHORAGE SAN FRANCISCO-OAKLAND BRIDGE

Vertical Forces:

	All weights in lb.	
Timber—1,175,000 ft. b.m.	6,000,000	
Concrete—150,400 cu.yd.	630,000,000	
Reinforcing steel	8,000,000	
Structural steel—superstructure	3,000,000	
Structural steel—substructure	9,000,000	
Water in wells (to El. 0)	88,000,000	
Total weight on pier base		744,000,000
Buoyancy from water displaced (100 per cent)		—245,000,000
Net weight on pier base		499,000,000

Unbalanced Horizontal Forces:

	Applied at El.	Longitudinal	Transverse
Cable pull (live load)	+267	18,400,000	0
Cable pull (dead load) (one bridge out)	+267	58,300,000	0
Wind on superstructure	+250	0	446,000
Wind on anchorage	+140	293,000	1,180,000
Tidal current	— 32	0	2,365,000
Earthquake on			
Cables	+267	13,502,000	8,000
Trusses	+227	1,885,000	724,000
Anchorage	— 51	75,600,000	75,600,000
Water surrounding pier	— 40	3,800,000	8,100,000
Mud surrounding pier	— 87	3,500,000	7,600,000

were designed to sustain the following combinations of loads:

Case I—Maximum unbalanced live load cable pull; plus ½ wind; plus maximum tidal current.

Case II—Maximum unbalanced live load cable pull; plus a 0.1 g. earthquake; plus maximum tidal current.

Case III—The static unbalanced cable pull resulting from the dead load of only one of the suspension bridges in place; plus maximum tidal current.

The permissible unit stresses for these various load combinations were basic stresses (*ENR*, March 22, 1934, p. 371) for Case I; basic stresses plus 40 per cent for Case II; and the elastic limit of the material for Case III. In order to satisfy the conditions due to Cases II and III, the strength of all parts of the anchorage is considerably in excess of that required to sustain Case I loading. The loads imposed upon the supporting rock by these loading conditions are shown in Fig. 3.

The San Francisco anchorage is of the gravity type depending entirely upon the weight of 63,600 cu.yd. of concrete to resist the 38,000-ton pull of the cables. The anchorage was not located at the end of the suspended structure, but was placed 890 ft. to the west because at that point the rock is stronger, is 40 ft. higher and has a natural slope opposing the tendency to slide in the direction of the cable pull. Moreover, at the adopted location it was possible to bring the cables in at a lower elevation, thus reducing the overturning moment on the anchorage. These advantages were secured at the expense of the backstay cable, involving the loss of some rigidity in the suspension system. The plan also required the construction of the San Francisco cable bent and its concrete support, designated Pier 1, the building of which was included in the anchorage contract.

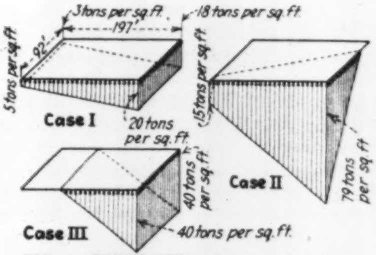
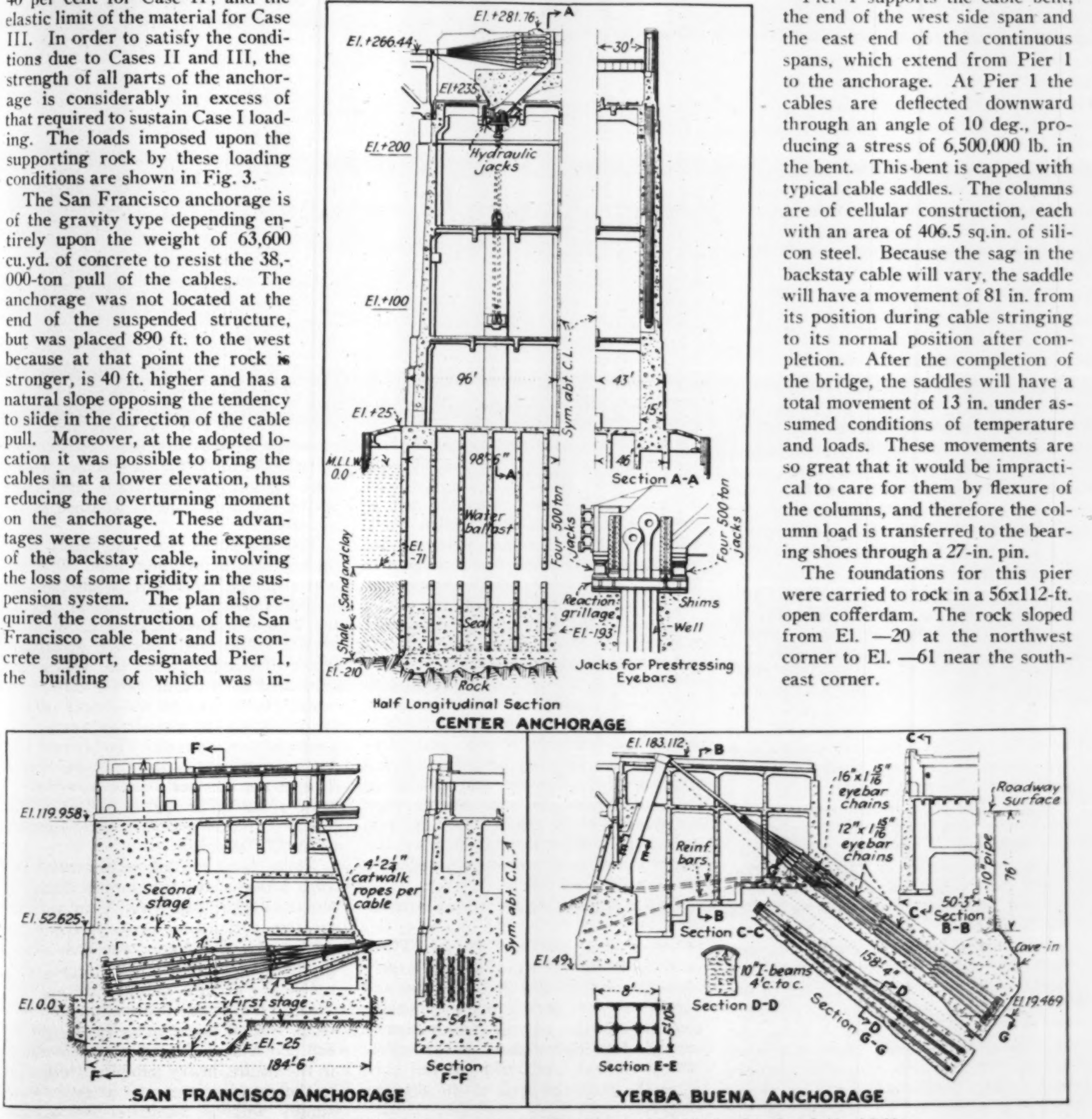

3 tons per sq. ft.
18 tons per sq. ft.
197'
92'
5 tons per sq. ft.
Case I
20 tons per sq. ft.
15 tons per sq. ft.
Case II
79 tons per sq. ft.
40 tons per sq. ft.
Case III
40 tons per sq. ft.

FIG. 3—PRESSURES under central anchorage from three combinations of loading. Case II involving earthquake forces of 0.1g.

Excavation for the anchorage was carried to rock in an open pit. Only a limited amount of groundwater was encountered in the surface strata, so that practically no pumping was required. The construction was planned for two successive stages; the first, now completed, includes sufficient weight of concrete to resist the cable tension during stringing operations. Upon completion of the cables for the west half of the bridge, the anchorage will be carried to its final height. To reduce shrinkage cracks, the concrete is being poured in keyed blocks of about 500 cu.yd. each. The eyebars were painted with an asphaltic compound, to reduce the bond with the concrete. This will permit cable stress to be transferred directly to the anchor girders.

Pier 1 supports the cable bent, the end of the west side span and the east end of the continuous spans, which extend from Pier 1 to the anchorage. At Pier 1 the cables are deflected downward through an angle of 10 deg., producing a stress of 6,500,000 lb. in the bent. This bent is capped with typical cable saddles. The columns are of cellular construction, each with an area of 406.5 sq.in. of silicon steel. Because the sag in the backstay cable will vary, the saddle will have a movement of 81 in. from its position during cable stringing to its normal position after completion. After the completion of the bridge, the saddles will have a total movement of 13 in. under assumed conditions of temperature and loads. These movements are so great that it would be impractical to care for them by flexure of the columns, and therefore the column load is transferred to the bearing shoes through a 27-in. pin.

The foundations for this pier were carried to rock in a 56x112-ft. open cofferdam. The rock sloped from El. —20 at the northwest corner to El. —61 near the southeast corner.


El.+281.76
A
El.+266.44
30'
El.+235
El.+200
Hydraulic jacks
El.+100
96'
43'
Sym. abt. C.L.
El.+25
15'
M.L.L.W. 0.0
98'-6"
A
46'
Section A-A
Water ballast
Four 500 ton jacks
Four 500 ton jacks
El. -71
Sand and clay
Shale
Reaction grillage
Shims
Well
El.-193
Seal
El.-210
Rock
Jacks for Prestressing Eyebars
Half Longitudinal Section
F
El.119.958
El.52.625
El.0.0
Second stage
4'-2¼" catwalk ropes per cable
First stage
El.-25
184'-6"
F
Sym. abt. C.L.
54'
Section F-F
El.183.112
B
C
E
Reinf bars
16"x1 15/16" eyebar chains
12"x1 15/16" eyebar chains
Roadway surface
10" pipe
76'
50'-3"
Section B-B
C
B
Section C-C
El.49
8'
5'-10"
Section E-E
10" I-beams 4' c. to c.
Section D-D
158'-4"
D
D
Section G-G
Cave-in
El.19.469
G

CENTER ANCHORAGE

SAN FRANCISCO ANCHORAGE

YERBA BUENA ANCHORAGE

FIG. 2—THREE TYPES of cable anchorages used on the West Bay crossing of the San Francisco-Oakland Bridge.

corner. The site was at one time occupied by a dock and later filled, so that the sheetpiles had to penetrate timbers and old piles. The cofferdam was sufficiently tight so that all excavation and placing of concrete were done in the dry.

Yerba Buena anchorage

The eastern end of the suspension spans which make up the West Bay crossing is on Yerba Buena Island. This island is a sand-covered rock formation which rises to a height of 340 ft. above water level. Since this huge mass of rock was readily available, it was more economical to anchor the cables to it than to construct a gravity anchorage as was done at the San Francisco end. To secure adequate anchorage, a tunnel inclined at an angle of 37 deg. below the horizontal was driven 170 ft. into the rock for each cable. Grillage beams were placed at the bottom of each tunnel and were connected to the strand shoe by means of an eyebar chain. The cables were turned downward over a steel cable bent. The downward inclination was for the purpose of engaging an adequate mass of rock in as short a length as practicable.

In excavating the anchor tunnels, a 6x8-ft. bottom drift was first driven for the entire length. This was next enlarged to the full section; steel roof beams were placed as the enlargement progressed, after which the roof was concreted.

The anchor girders and eyebars were then erected. At each pin, play was prevented by U-bolts; all eyebar heads, except those at the girders, were packed with an asphaltic compound. The same compound was used to paint all the eyebars. These precautions, as at the San Francisco anchorage, were an effort to transfer the cable pull directly to the anchor girders.

Near the completion of excavation in the north tunnel a slip occurred, letting about 500 cu.yd. of rock fall. As much of this as practicable was refilled during the placing of the concrete roof. After the tunnel was filled with concrete, a 10-in. well hole was sunk from the surface to the spot where the slip occurred, and the remaining space above the tunnel lining was filled with concrete from the top.

The cable bent at the front of the anchorage and over which the cables are deflected is made up of a 90-ft., silicon steel column of 1,109-sq.in. area, under each cable with a horizontal connecting strut and cross-bracing below the lower deck level. The entire bent is inclined so that the angles between bent and cable on the two sides are equal. The lower end of each leg of the bent is rigidly secured to the concrete by twenty-two 3¼-in. anchor bolts. At the top of the columns there is a small amount of movement caused by changes in live load on the bridge. This movement is taken up by bending in the 90-ft. columns.

The support for this bent is a large block of reinforced concrete carried down to a stepped foundation in solid rock. The inclination of the anchor bent of almost 20 deg. with the vertical imposes a large horizontal force on this supporting concrete. At this part of the island the rock slopes toward the bay, so it was considered desirable to oppose the tendency to slide by tying the anchor bent foundation to the concrete in the eyebar anchorage tunnels by reinforcing bars running horizontally in the bottoms of the walls of the anchorage.

All elements of the anchorage are enclosed in a concrete structure which is treated architecturally to match the San Francisco anchorage.

Personnel

The center anchorage up to the lower deck level was a part of the contract held by Transbay Construction Co. The personnel on this contract was listed in *ENR,* April 5, 1934, p. 431. The San Francisco anchorage is being built by the Healy-Tibbitts Construction Co., of which C. C. Horton is president and Alec. Cochrane superintendent. N. W. Reese is resident engineer for the state of California.

The Yerba-Buena anchorage is being built by the Clinton Construction Co., of which W. B. Brinker is president, Albert Huber vice-president, and P. A. Petersen superintendent. Harry Carter is resident engineer for the state. The Columbia Steel Co. will complete the center anchorage above the lower deck level and is placing certain steelwork in the other two anchorages. The personnel of the California Toll Bridge Authority was listed in *ENR*, March 22, 1934, p. 377.

Pine View Dam Will Not Harm Ogden Artesian Water Supply

IN ORDER to determine the possible effect which the building of Pine View Dam, in Ogden Valley, might have upon the water supply of Ogden, Utah, the U. S. Geological Survey has completed an investigation of the artesian wells in the valley, from which the city obtains a large part of its municipal water supply. The Bureau of Reclamation is constructing, for irrigation purposes, an earthfill dam at Pine View, a short distance below the head of Ogden Valley, and when the dam is completed the wells at Artesian Park will be 30 to 40 ft. under water. Some concern was expressed that seepage and pressure from the added weight of water might seriously affect the water supply, and the survey was conducted to determine the probable effect. Provision is made to pipe the flow from the wells through the reservoir and dam to the city of Ogden. As a result of the survey, it was determined that the filling of the reservoir would exert pressure on the artesian bed, thereby increasing the pressure and discharge from the wells. Because of the high compression of the soil at Artesian Park, it is not considered probable that the water stored in the reservoir will seep into the artesian bed.

Ogden Valley, which has an area of only 23 square miles, has extensive deposits of clay, sand and gravel. These sand and gravel deposits are largely waterbearing at the present time and constitute the underground reservoir from which the city derives its water supply. The higher parts of the valley, which are not underlain by the clay, form the recharge area of the artesian reservoir.

A study of test wells showed that the annual fluctuation of water level ranged from a few feet to more than 30 ft. It was also shown that high groundwater levels occurred during April, May or June of each year, and that withdrawals at Artesian Park probably affect artesian pressures in the entire artesian reservoir and also to some extent the level of the watertable. Because of the heavy summer withdrawals at Artesian Park, the maximum artesian pressure that would naturally result from spring recharge is never attained in the vicinity.

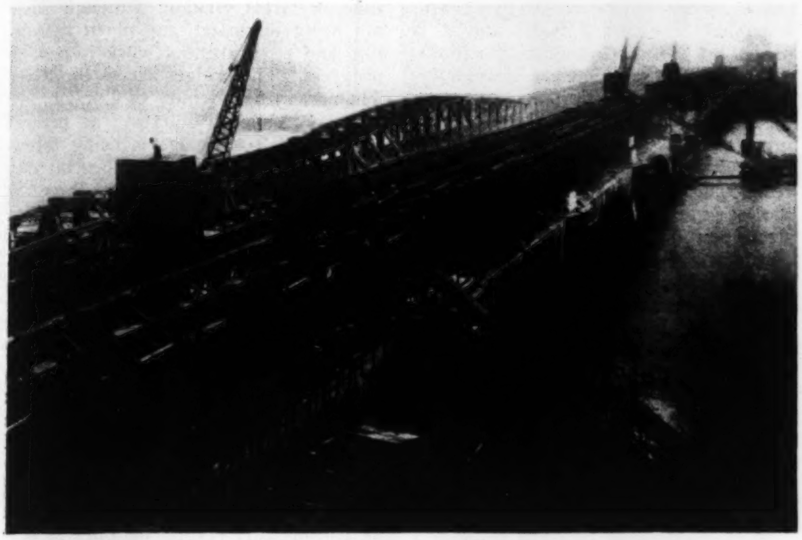
The discharge from the city's wells during the year ending Sept. 30, 1934, was about 11,750 acre-ft., while the total withdrawal from other wells in the valley was estimated at only about 1,700 acre-ft. The total quantity of surface water discharged from the valley was estimated to be about 26,400 acre-ft., of which 16,800 acre-ft. was direct surface runoff, while the remainder came from groundwater sources. The annual loss by evaporation, transpiration and underflow at the Pioneer Dam was estimated to be about 3,700 acre-ft., which would make the total groundwater discharge about 27,700 acre-ft.

There is at present an essential balance between average annual discharge and recharge; the withdrawal through artesian wells is compensated chiefly by increased recharge and decreased groundwater runoff. The increase in recharge occurs chiefly during the spring, while the decrease in groundwater runoff occurs chiefly during the fall and winter. Unless there should be, in the future, heavy pumping from wells in the recharge area, the artesian water supply will be adequate for at least the present rate of consumption.

Construction in England

From an Engineer's Notebook

River and drainage work being carried out by catchment boards—A notable scheme developed for demolition of Waterloo Bridge without interfering with river traffic—Design of the bell tower of Liverpool Cathedral presents an unusual structural problem.



WATERLOO BRIDGE in London is being demolished to make way for a larger structure. Because of dense river traffic demolition is being carried on from above, centering being suspended from the trusses here shown. Adjoining the old bridge is the temporary steel bridge now used as the river crossing.

A RECENT VISIT to England, the first for five years, provided certain impressions, and presented some unusual features which may be of some general interest.

In the first place, viewing conditions generally, a renewal of activity in the construction of housing schemes and small municipal development works, a continuation of road improvement, and the recent initiation of widespread drainage and river improvement works by public "catchment boards," all have had the effect of brightening the construction outlook in England. In the south at least there is little unemployment amongst engineers and architects, and although the north of England industries are still far from normal, technical employment in the north is being fairly well maintained.

Work of the catchment boards

The catchment boards are an interesting development of recent years, being statutory public bodies each charged with the control of one of the catchment areas into which England and Wales have been divided. Already notable drainage works have been carried out by the boards, and at Cambridge there has been constructed an unusually large-scale model of the tidal section of the river by the Great Ouse Catchment Board. The model occupies an uninterrupted space of 75x55 ft., a 12½-ton plunger creating a tide which will be used first to check the history of the "Wash" tidal estuary back as far as 1917, and possibly as far back as 1873; thereafter predicting work will be carried out for the future.

Most of the larger British contractors have contracts of some magnitude abroad, there being few really big jobs at present active in the British Isles. The smaller firms, however, are fairly well supplied with work, largely municipal in character. Of this, road work forms a large part. It is of special interest to note that the British Ministry of Transport recently completed the largest single traffic census ever undertaken, on all the main roads of England, made with a view to the adequate planning of a road-development program for the next few years. A road-traffic census has also been in progress near Liverpool, where the success of the new East Lancashire trunk road, feeding the new Mersey Tunnel, has again focused attention on the possibility of still further solving Liverpool's traffic problems by the construction of a vehicular tunnel through the hill on which the city is built. Preliminary plans for this Everton Tunnel, which will be a bore through the local sandstone, possibly three miles long, are under consideration.

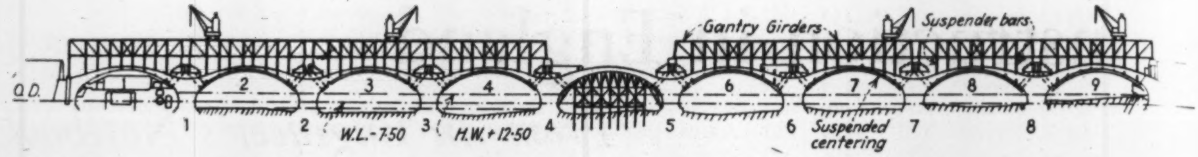
Recent statistics for Mersey Tunnel traffic are of interest. It was estimated that in the first year of operation, 1,350,000 toll-paying vehicles would pass through, yielding a revenue of $675,000. The actual figures for the first year, which finished on July 17 of this year, were 2,997,807 toll-paying vehicles, yielding $1,244,790. The tunnel was described in *Engineering News-Record,* Nov. 16, 1933, p. 587. Details were then given of the lower part of the circular tunnel section, as yet unused; so successful have operations proved, however, that this lower part may soon be put into service.

Traffic regulations

Traffic precautions and regulations will be of interest to American highway engineers. A speed limit of 30 miles per hour is now strictly enforced in all built-up areas in England, and even on new main trunk roads at important crossings, where it is effectively necessitated by the use of central intersection gardens, around which the four traffic streams are diverted. Pedestrian crossings, marked by easily recognizable poles (the famous "Belisha beacons") have done something to solve the conflict between automobile drivers and city walkers. And the prohibition of all horn blowing after eleven at night, in large cities, is a feature which has much to commend it to North American practice.

Port work nears completion

The visitor to England will quite probably land at Southampton, now one of the leading passenger ports of the world, developed almost wholly by the initiative of the Southern Railway, which operates practically all its services. In *Engineering News-Record,* March 3, 1932, p. 314, were given details of the $65,000,000 development scheme, involving 407 acres of land reclamation and the construction of 7,000 ft. of quay wall with 45 ft. of water alongside low water. All major parts of this scheme are now complete, and administrative forces are busily engaged on road, sewer and track layout work.



THE WEIGHT OF THE ARCHES of Waterloo Bridge, except in the central span, was transferred to overhead trusses as a preliminary to their demolition.

Reference to the article mentioned will show the convenient loop layout soon to be available for the London boat trains. This facility together with the commodious and well planned passenger sheds (with floors uniformly sloped up from quay level to the high level of British railroad car doors) will render the handling of passenger traffic in the future a relatively simple matter. Further along the south coast of England, a large car-ferry terminal is being constructed for the same railroad, at Dover. Serious difficulties have been encountered with the chalk foundation, and considerable delay in the completion of the work has already been experienced in consequence.

Recent extensive development work at Tilbury, at the mouth of the River Thames, is now complete and the Port of London Authority (which controls all the tidal part of the river) has now no large construction project in hand, although a considerablee amount of important maintenance work is proceeding. Application is to be made to Parliament, however, for the necessary powers to carry out an improvement scheme costing $8,500,000 during the next five years, the port authority having decided that the depths of water in their main ocean docks should be increased to over 30 ft. At Goole, farther up the east coast of England, important quay wall and lock works are being constructed, while several Scottish harbors have recently carried out improvement works, notably Aberdeen, where important fish wharves have been reconstructed by means of steel sheetpiling. Interest in British dock and harbor engineering at present centers in Glasgow, where the Clyde Navigation Trust, the harbor authority for Glasgow, has approved a $35,000,000 development program, despite the generally depressed state of British shipping. The Clyde scheme is based on a fifty-year calculation of the docking and shipping requirements of the river, and it will provide an additional 4½ miles of wharfage, covering 1½ miles of waterfront. The project is based on the recommendations of a special committee of the trust, which has been considering the matter since 1923, when a still larger scheme was visualized.

Power plant construction

Perhaps the greatest change to be seen on the face of England, after a five-year interval, is the coming into existence of over 3,000 miles of 132,000-volt overhead transmission lines, a feature previously unknown. Concurrently, the output of electricity has increased by about 50 per cent since 1929 in Great Britain, the corresponding world figure being only 10 per cent. Generally known as the Grid, the network is controlled by the Central Electricity Board, a publicly constituted body, and it is served by 129 main generating stations, practically all of which are steam-operated. The construction of several of the larger and more recent stations has involved many unusual civil engineering features, especially in view of the restricted sites available, while one of the greatest independent industrial steam-power plants (that for the new Ford factory outside London) included one of the most difficult foundation problems ever tackled. Details of this latter work and of the outstanding construction work at other main stations may be found in recent publications of the Institution of Civil Engineers (London).

Water power is responsible for less than 2 per cent of the total power output of Great Britain, stations located in North Wales and the Galloway and Grampian areas of Scotland being now connected with the Grid. Of outstanding interest in this field is the Lochaber waterpower scheme in northern Scotland, supplying power for the production of aluminium at Fort William, the second part of which has just been completed. The scheme was generally described in *Engineering News-Record*, July 4, 1929, p. 11.

Waterloo Bridge being demolished

Bridge construction presents few notable new structures at the present time in Great Britain, although some are being discussed, and much renovation and strengthening work is now in progress. The bridges across the River Thames, in the vicinity of London, are always of special interest; at present the old Chelsea Bridge is being reconstructed, while within the central city area at Waterloo Bridge there is progressing a most intricate bridge demolition preparatory to the construction of a new river crossing. Waterloo Bridge, one of England's most famous structures, has been the center of controversy, with regard to its demolition, for quite a few years. Opened for public use in 1817, John Rennie's finely planned bridge consists of nine semi-elliptical arches of 120-ft. clear span, supported on eight piers, 20x75 ft. over cutwaters, carrying a roadway 27 ft. 6 in. wide with two 7-ft. 6-in. sidewalks. The pier foundations consist of timber rafts resting on piles of elm, oak and beech. The piers are formed of sandstone with granite facing, and the arches are each made up of about 1,650 blocks of Cornish granite. Serious settlement of pier 5 first developed

Altigraph, Ltd.

SUPPORT FOR THE BELLS in the tower of Liverpool Cathedral presented an unusual structural problem. Dynamic and dead loads are carried to the tower walls through the truss system here shown. The trusses rest on plate girders set on a reinforced-concrete girdle surrounding the tower just inside the finish line.

in 1923, since when the trouble has grown worse. A temporary bridge was opened in 1925, paralleling the existing bridge, and arches 5 and 6 were shored up with timbering.

Demolition of the bridge began in June, 1934, and plans for a new bridge have been ordered by the London County Council. Rendel, Palmer and Tritton are consulting engineers to the council for the work; the temporary steel bridge and demolition of the existing bridge are the work of Sir William Arrol and Co.

The demolition of such a structure, located on a tidal waterway so widely used as is the River Thames, is a matter of considerable complexity. At the time of the writer's visit to the bridge, just one year after demolition had started, the cutting out of the arch keystones had just started, so that the whole operation will be comparable in time, as well as in magnitude and difficulty, with the erection of a new bridge. The first item in the program was the stripping of balustrades, roadway, and clayfilling below the roadway, this being done evenly over all arches. During demolition, all the arches except the main "propped" arch (No. 5) are spanned above by two steel gantries, each in four sections, corresponding to four arches, spanning between the piers, as shown in the accompanying sketch and photograph. Each gantry consists of four steel trusses per span, supported on concrete blocks built up from the piers, braced together and supporting traveling cranes on the top chords of the inner pair. The trusses will later be dismantled by cantilevering back to their supports. Steel centering, placed in position from pontoons, is now held beneath the underside of all the river arches (except No. 5) by means of suspension bars, taken through 5-in. holes in the arches and supported by the gantries. For the arch across the embankment roadway, a similar arrangement is used.

When demolition started, it was thought that possibly, due to the settlement of pier 5 (over 2 ft.), a secondary arching effect might exist in arches 5 and 6, acting together and spanning between piers 4 and 6. Vertical chases were therefore cut in the upper portion of the masonry on both sides of pier 5, and by this means such action was found definitely to exist.

The condition of all the stonework, as revealed up to the present, and as examined in the interior of the piers by means of illuminated mirrors in boreholes, is excellent. Incidentally, brick partition walls adjacent to pier 5 show no signs of cracking, possibly due to the use of old-time lime mortar in the original joints.

With the suspended centering in place, the arches have been stripped completely, until only the arch rings remain. Demolition of these is proceeding uniformly at each arch, the stones of two outer strips to each arch being gradually cut out, starting at the keystones, so as to leave eventually a series of narrow arches (12 ft. wide) splaying out to full width at the piers. Until this stage is reached, all the arches will have been maintained as self-supporting. The weight of these narrowed arches will then be transferred, through the suspension rods, by means of special hydraulic jacking arrangements, to the inner pairs of girders in the temporary gantries. With the arch thrusts thus removed from the piers, dismantling of these last arch sections can proceed. The piers are to be demolished inside steel sheetpiling cofferdam.

THE CORNERSTONE for one of the new buildings of the University of London was laid before excavation of the foundation had begun. During the excavation it was supported in place on a column formed within steel sheetpiling.

Built to stand for centuries

It is in the field of structural engineering, but more especially structural work for buildings, that the contrast is most marked between British and American practice. Where the life of a building in the New World is reckoned in terms of years, in the Old World it is still considered in centuries. The Bank of England, for example, has slowly been undergoing reconstruction, work having started almost ten years ago, and all designs and construction work are based on an estimated life for the new building of a thousand years. Similarly, the new University of London buildings, now being erected on a 10½-acre site behind the British Musuem in London, are *not* being constructed as steel frames, since it is stated by the architects that knowledge of the use of steel extends back only a matter of 60 years, whereas the walls of the building are expected to last five or six times that number of years. On the other hand, floors with spans up to 33 ft. obviously have to be supported on steel beams. The buildings include a 220-ft. tower which is to be used as a bookstore, foundation loads under it being therefore unusually high for the London area. In view of its monumental nature, the building is being founded (directly, and through bearing piles) on blue clay more than 25 ft. below ground level, in case a future drop in water level in the superincumbent strata might affect the stability of the foundation bearing.

An unusual foundation problem was presented to the builders of the new building for the University of London due to the fact that it was desired to signalize the start of construction by having the King lay the cornerstone. The cornerstone had to be located at about the ground level, which was 30 ft. above the point to which excavation for the foundations would have to be carried.

To meet this condition, a box shaft of steel sheetpiling was driven to full penetration, a reinforced-concrete beam was laid on this shaft back of the building line, and brick and stonework to support the cornerstone were built up from this beam. To insure that the stone was in correct position, the carrying beam was picked up on jacks and roller bearings; when the location adjustments were correct, the permanent connection between the beam and the shaft was completed.

During the past summer, excavation of the foundations was completed to a depth of 30 ft. below the ground level, leaving the cornerstone with its supporting columns high above the bottom of the excavation.

Charles Holden is architect and R. Travers Morgan is consulting engineer for the structural work of the university building. The general contractors are Messrs. Holland and Hannen and Cubitts, London.

The engineering responsibilities of building longevity bring the past into consideration as well as the future! In the northeast of England, for example, the stately pile of Durham Castle (part of which dates back to the eleventh century) has lately given rise to serious fears for the stability of its foundations, high up above the River Wear, with the result that remedial underpinning work, estimated to cost $500,000, is now proceeding with the aid of modern equipment and construction methods, following carefully prepared civil engineering designs.

A notable tower

It is in the North of England also that there is to be found what is probably the most interesting structure being erected at the present time in Great

Britain—the new Anglical Cathedral of Liverpool. Words become peculiarly ineffective when used to describe this masterpiece of Sir Giles Gilbert Scott, the architect, whilst its record-breaking dimensions pale into insignificance before any estimate of its esthetic value. Its central tower is to be 326 ft. in height, octagonal in shape externally, providing a great central space in the cathedral 72 ft. square between columns, and 167 ft. high above floor level. The tower is to contain a peal of bells, and as these are to be in keeping with the size of the cathedral, their support introduced a most interesting structural problem. The solution has been achieved by means of one of the most complicated structural-steelwork layouts which the writer has been privileged to see, and as this is now being erected a brief description is added. Burnard Geen, of Westminster, London, is the consulting engineer responsible for this and all other special structural engineering involved in the tower.

In the first place, preliminary investigations revealed an almost entire lack of data as to the stresses set up by bell ringing. This matter therefore was investigated by Mr. Geen from first principles. The magnitude of the calculated stresses surprised even bell makers and justified the close attention which has been devoted to the problem.

The space to be occupied by the bell frame floor is an irregular octagon, bounded by the tower walls, with a clear span of 74 ft. 6 in.; the damping chamber floor is to be located 10 ft. 6 in. below this, and the ringing chamber floor is another 23 ft. below and so immediately above the vault of the central space within the cathedral. There is, therefore, no lack of room for the bell supports, and it has been possible to arrange them in a circle, an arrangement believed to be novel. Each bell will be mounted on a special vibration-absorbing pad. The room available assisted in the design of the girders to support the bells mountings which, in view of their span and the heavy dynamic loading due to the bell ringing, must be of considerable depth. The final design utilizes trusses 23 ft. deep, which is the full depth between the two floors referred to, achieved by slightly sloping upward the lower chords to the supporting plate girders. Two pairs of such trusses span the tower space at right angles to each other, diagonally arranged, and resting through rocker bearings on plate girders 41 ft. long and 4 ft. deep, which span across the corners of the tower. The length of the trusses is 82 ft. The plate girders rest on a heavily reinforced concrete girdle (6x6½ ft.) which has been constructed all round the tower, just inside the finished stonework line.

The design of the girders for their permanent function was an involved operation, especially at the junctions of the two pairs, but erection limitations have added still further complications. When completed, the girders will have to withstand practically no wind load, but during erection they may be subjected to very high winds, located as they are 200 ft. above the ground, on a site at the top of a hill facing the open sea. Wind-stress design was therefore an important feature, as was also compliance with erection procedure since the only crane available for lifting has a capacity of four (long) tons, and temporary staging is severely limited, due to the location, the height above the ground and the clear span. The resulting final design is therefore an unusual example of the art of the structural engineer, and although only 220 (long) tons of steel are involved, the engineering work in design is probably a record if considered as a work/ton ratio. Erection has been proceeding slowly throughout this summer, and is now complete.

It was, perhaps, not inappropriate that this significant contribution of the civil engineer to one of the most inspiring and loveliest of all buildings of modern times, silhouetted against an evening sky, should have been one of the last glimpses of England to be seen by the writer as he sailed back again to the west.

Montreal, Que. R. F. LEGGET.

New Hampshire Water Board Outlines Conservation Plan

IN ORDER to carry on a comprehensive program of water conservation activity, the state of New Hampshire created, in 1935, the New Hampshire Water Resources Board. The purpose of the board is to provide for the construction of dams and other necessary works for the conservation, storage and utilization of water. The board has been organized as a corporation and has been empowered to issue bonds and to collect fees for the water used with which to retire the bonds. During the short time that it has been organized, the Water Resources Board has developed a tentative program calling for the building of six dams.

The first of these is the Pittsburg reservoir project, which is to be located on the Connecticut River, near the village of Pittsburg. The dam will consist mainly of an earth embankment, and will have a height of 90 ft. and a length of about 2,000 ft. A second project is to be located directly below the junction of the Swift and Diamond Rivers, which flow into the Androscoggin. This dam will be a concrete structure, 90 ft. high and 1,300 ft. long. In addition to the concrete dam, an earth dike having a height of 40 ft. and a length of 2,000 ft. will be constructed. The reservoir created here will have a water area of about 2,500 acres and a capacity of about 103,300 acre-ft. This project is estimated to cost $1,300,000.

The Blackwater River project is located at Swetts Mill in the town of Webster on the Blackwater River, a tributary of the Contoocook River. The proposed dam will have a spillway section of concrete masonry, with earth embankments, and will have a height of about 70 ft. and a length of about 1,200 ft. In addition, several small earth dikes will be necessary. With a reservoir area of about 4,300 the dam will store about 108,000 acre-ft. This project will cost about $1,500,000.

The Suncook Ponds project will be located on the Suncook River about 27 miles above its confluence with the Merrimack River. The dam here will be an earth structure about 50 ft. high and 308 ft. long. About 40,200 acre-ft. will be stored here over an area of about 2,000 acres. This work will cost about $500,000.

The Water Loom Pond Reservoir will be created by raising the present dam on the Souhegan River, near New Ipswich. This will be an earth dam and, when completed, will be about 35 ft. high and 520 ft. long, and will store about 5,200 acre-ft. over an area of 550 acres. The estimated cost of this project is $200,000.

The dam for the Livermore Falls Project will be located on Pemigewasset River, near Plymouth. The proposed dam, which will be about 120 ft. high and 2,000 ft. long, will store about 275,400 acre-ft. over an area of 6,200 acres. This project, which is to cost about $5,500,000, will be used to increase the low-water flow at Manchester, N. H., from about 800 cu.ft. per sec., as at present, to about 1,800 cu.ft. per sec.

It is estimated that the Livermore Falls Reservoir, under normal operating conditions, would have absorbed the entire floodflows above it in 1927, and if the reservoir had been filled when the flood occurred, there would have been a reduction of at least 60 per cent in the flow from the Pemigewasset. This would have had a marked effect throughout the entire length of the Merrimack River. The other reservoirs would principally effect the floodflows on the branch streams on which the dams are located, completely protecting them from future flood damage. Some flood protection, although to a lesser degree, would also be provided for the main streams.

The board, as now organized, consists of five members: John Jacobson, Jr., Laurence J. Whittemore, Milton Shapiro, William F. Sullivan and E. R. D'Amours. The engineering work is in charge of Richard S. Holmgren.

Aerodynamics and the Civil Engineer—VIII

Using Aerodynamic Research Results in Civil Engineering Practice

An attempt to correlate a large mass of vitally important data virtually unknown to the civil engineer, and to present it in the form of a specification of practical utility in the design of structures subject to wind forces

By W. Watters Pagon
Consulting Engineer, Baltimore, Md.

• IN THIS CONCLUDING ARTICLE of the series Mr. Pagon undertakes the difficult task of presenting design values for pressure and suction in terms of wind velocity for a substantial variety of engineering structures. By reviewing the experimental data reported and analyzed in the preceding seven arrticles and then presenting specific design recommendations, he has fashioned an article of highly practical value. Here for the first time is available a modern approach to wind design, which to date has entirely ignored both the theory and fact of aerodynamic research. The article is complete in itself but for more extended treatment of the basic data and fundamental concepts the reader is referred to the previous articles in the series.

Aerodynamic Science	March 15, 1934
Stack Vibrations	July 12, 1934
Bridge Model Tests	Oct. 11, 1934
Building Model Tests	Dec. 27, 1934
Vortices and Eddies	April 25, 1935
Engineering Meteorology	May 9, 1935
Wind Velocity and Height	May 23, 1935

—EDITOR.

IN THE SEVEN preceding articles the author has touched lightly upon some of the more important advances in knowledge which have been made through aerodynamic research. In order that these advances may attain their greatest value for the practicing engineer, he will coordinate them in this final paper. But first let us briefly review them.

The ideal fluid

The approach to all study of fluid flows (*ENR,* March 15, 1934) is made by utilizing the theory of the ideal fluid: (1) incompressible, (2) frictionless, and (3) irrotational. Consideration (1) applies well to air at all velocities within the civil engineering range and is therefore not an assumption; considerations (2) and (3) hold very well for the general flow but break down in the vicinity of any body or of a bounding surface, so that while we may assume the ideal fluid when studying the general flow, we must be prepared to make adjustments at each body, especially in the wake of each body.

For rounded bodies similitude enables us to make studies of small models and then to magnify the flow for the prototype, with due consideration for Reynolds' Number; for angular bodies such as bridges and buildings there is no scale effect worth considering, hence we can assume complete identity of model and prototype. Thus by the use of models in a wind tunnel we can make great advances in understanding.

We start, therefore, with the two fundamental relationships of fluid dynamics—namely Bernoulli's equation and the Helmholtz-Rayleigh analysis of discontinuous flow. In hydrodynamics Bernoulli's equation is stated as *velocity head plus potential head equals a constant;* in aerodynamics, as *velocity pressure plus potential pressure equals a constant,* the two stating the same implication of the law of the conservation of energy. The constant is described in hydrodynamics as the potential head of the water where it is still, as in the pool behind a dam; and in aerodynamics as the pressure at a great distance—i.e., where there is zero velocity. Then as flow ensues, part of the potential energy is transformed into velocity head or pressure, and the potential head or pressure is thereby diminished. This is the principle of the injector, and of the external suction developed on the roofs and side walls of buildings.

Viscosity

If our fluid had *no* viscosity, there would be a retardation of flow aft of the body, which would restore the potential pressure fully. Thus in an ideal flow there can be no force tending to move the body because of equality of forces fore and aft, although in the ideal fluid we can still have a turning moment, if there is dissymmetry of flow on opposite sides. In the discontinuous theory, however, an attempt is made to approximate to fact, in that the pressure behind the body is assumed to be the same as that at infinity, and therefore there is a resultant drag. This theory, however, does not go far enough, because there is actually a suction behind each body, producing still higher drag.

Now actual fluids *do* have viscosity, hence we next must consider its effect. On the forebody the effect is small, and the ideal-flow theory, or the discontinuous-flow theory when modified, gives a good approximation to the truth. The effect of viscosity appears in the retardation along the body surface. At the surface itself there can be no velocity, because the air adheres to the body; just outside of the surface is a layer of fluid in laminar motion—that is, in motion such that one lamina slides over the next beneath with no displacement normal to the surface; outside of this boundary layer is the free flow, which conforms nearly to the ideal or the discontinuous flow. This condition holds for some distance aft of the leading edge, but there comes a rather definite distance at which eddies suddenly are formed that project themselves (saltate) normal to the surface and create, outside of a very thin laminar layer, a layer of great turbulence. The saltation of these eddies causes a transfer of slower velocity to the outer fluid, and of higher velocity to the inner fluid, so that as a result the fluid near the body is activated more than before. Because of this, the flow near the body more nearly patterns itself after the true ideal flow—that is, there is more energy remaining whereby the fluid attempts to re-establish in the wake the pressure condition that obtains on the forebody. This explains why there is a sudden drop in the drag coefficient or resistance at the critical region for rounded bodies. (See *ENR,* March 15, 1934, p. 350, Fig. 2.)

When we consider angular bodies, however, we find that the sharp corners themselves serve to locate the points at which eddies form, regardless of the body dimensions; hence we find that the drag is almost entirely independent of Reynolds' Number.

For both angular and rounded bodies, therefore, there are corners or meridians at which the flow breaks free of the body surface in a sheet of shearing or discontinuity, outside of which there is an almost ideal flow as assumed by Helmholtz-Rayleigh, and inside of which there is a relatively still wake. This wake is our place of greatest ignorance. For cylinders at low velocities it consists of two large stationary Föppl eddies, "geared" to the outer flow; and at higher velocities these eddies move alternately downstream in a vortex street, bounding a sluggish flow that moves forward toward the body. The eddies roll along as it were between the two flows until they decay into confused turbulence. For angular bodies the discontinuities start at the corners of each face seen by the wind, and at times also at the leading edge, from which they may roll along an adjacent surface, rattling windows as they go. (See Fig. 6, *ENR*, Dec. 27, 1934.) The author has made some progress toward a mathematical analysis of these eddies which will appear later.

On the forebody of rounded bodies the ideal flow may be modified to give a sufficient approximation (*ENR*, March 15, 1934, Fig. 3); and on the forebody of angular bodies the discontinuous theory may also be modified to give a good approximation, as shown in *ENR*, Dec. 27, 1934, Fig. 3. On the afterbody we have a constant central low pressure in the wake, bounded by a series of traveling eddies along the edges of the wake, which in point of time give an average value that can be utilized. Occasionally, as in the study of "cavitation" on turbine blades or propellers, it is desirable to consider the instantaneous effect of the pressure in these traveling eddies, but this is unnecessary for the wind effect on buildings.

Eddies

The periodicity of the eddies from cylinders is discussed in *ENR*, April 25, 1935, and their effect on a large stack in *ENR*, July 12, 1934. The periodicity is also of importance in the design of long-span high-tension cables, which "dance" seriously under certain conditions of wind or of ice coating and wind, as described below.

The eddies, which peel from every edge seen by the wind, of course must cause a difference in the resistance of flat plates whose elongation ratio of length to depth varies. A square plate causes an eddy at each of the four equal edges, so that the contours of pressure are as shown in *ENR*, March 15, 1934, Fig. 5; but the edge leakage and eddy effects on plates of large elongation ratio, length to width, are confined to two edges alone.

Wind resistance of structures

Plates and Shapes—The drag coefficient, C_d, for large square flat plates (of area greater than 100 sq.ft.), for signboards and for large free-standing walls is 1.28; or the unit pressure is $33(V/100)^2$, in lb. per sq.ft., where V is in m.p.h. For long narrow plates and for structural members standing relatively alone it is 2.0, or the unit pressure is $50(V/100)^2$. For other elongation ratios see Table I.

Bridges and Trusses—A truss behaves to a degree like a perforated plate, sieve or lattice. It has been found by Eiffel and at Göttingen that lattices have a drag that varies with the elongation ratio, just as do rectangular solid plates, but we have no systematic series upon which to base an extended formula. In *ENR*, Oct. 11, 1934, are given the Göttingen tests on a series of Warren trusses of elongation ratio 10:1 average, with varying widths of member, so that the percentage of perforation and of solid area to the gross overall area varied progressively. Note, however, that No. 5 was formed of shapes, whereas Nos. 1, 2, 3 and 4 were only perforated plates. For single trusses the results plot approximately as $C_d = 1.25 + 0.6\ (1 - k)$, where k is the solidity ratio, or solid area divided by gross overall area, and $(1 - k)$ is the porosity ratio. In the absence of tests at other than 10:1 ratio we may use the variation given above for rectangular plates, but since in general bridge practice the elongation ratio is approximately 10:1, and since there is little change of drag coefficient between ratios of 6 and ∞ it may be unnecessary to go to this refinement. It should be noted that for girder No. 1 of the series, $k = 1$, and $C_d = 1.25$, which is inconsistent with Table I, above. This probably is because of the shape, since as yet we have wind tunnel tests only on circular disks, squares and rectangles, and we cannot estimate the mutual interference of end and side eddies until we know more about the wake.

The significance of the factor k is that some of the air passes through the truss or lattice and some around the peripheral edges, the first depending upon the porosity and the second upon the relationship of edge length to gross overall area. The coefficient C_d and therefore the drag per unit area increases with the porosity ratio.

Tandem Members and Trusses—Since each member creates an eddying wake, its mate in the rear receives a flow that may be in this wake, if the two members are sufficiently close. The effect may even be such as to collapse the two members against each other, for small spacing; but as the spacing increases, the drag on the rear member commences to build up rapidly. Göttingen tests permit of some evaluation. If we divide the solid area of each truss by the total length, we obtain an equivalent solid depth D, comprising the joint depth of the chords and the web members, where $D = kh$, and h is the overall average height of the trusses. Now for wind ***normal*** to the trusses it appears that when the truss spacing amounts to $5D$, approximately, the maximum coefficient for two trusses is nearly reached, and at $15D$ is fully reached.

Based upon theoretical reasoning and upon this one series of tests (*ENR*, Oct. 11, 1934, Tables 2 and 3), and subject to further advances in knowledge, the author proposes a drag formula of the following type: $C_d = 1 - h/b + 2/3k$, where b = truss spacing; this applies for b greater than $2\frac{1}{2}D$. For b less than $2\frac{1}{2}D$, we can use the values of the coefficient for a single truss. The formula applies well, within the test limits of $k = 0.35$ and $k = 0.50$, which is the customary range; not so well for $k = 0.63$ (see girder No. 2); and poorly for $k = 1.0$ (see girder No. 1).

Since the solidity ratio k occurs in the denominator, the drag coefficient rises rapidly for trusses with narrow members, so that for k less than 0.2 we may merely use the coefficient C_d = 2.0 on each truss, or 4.0 for the pair. In a bridge with $k = 0.30$ and $h/b = 1$, we would have $C_d = 2.20$; for $h/b = 0.67$, 2.50; etc., since in general b will exceed $2\frac{1}{2}D$.

The formula applies to a normal length/height ratio of 10, approximately. For greater ratios the drag is slightly higher, as shown in Table I, and would be proportionate; for less ratios it is not advisable, until more tests are available, to make any reduction. The formula derived from the test trusses which consisted only of flat plates, and girder No. 5—which was composed of structural sections—showed lower coefficients. But the test of girder No. 5 with the wind askew in the horizontal plane shows a maximum increase of 11 per cent at $\alpha = 20$ deg., which is sufficient to make up the difference; hence the formula in reality applies to actual truss sections. Table 2 compares the formula with the tests.

TABLE I—RESISTANCE OF FLAT PLATES AND SINGLE STRUCTURAL MEMBERS

r =	1	2	3	4	5	6	10	∞
C_d =	1.28	1.45	1.57	1.66	1.72	1.76	1.85	2.00
Unit pressure =	33	37	40	42.5	44	45	47.5	$51(V/100)^2$

Approximately, for r greater than 2, $C_d = 2(1-2/3r)$.

TABLE 2—COMPARISON OF COMPUTED AND TEST DRAG COEFFICIENTS FOR PAIRS OF TRUSSES IN TANDEM

(h = 4.53″; $D = 4.53k$)

b, in.	$\left(1 - \frac{h}{b}\right)$	Girder No. 1 $k = 1.0$ $\frac{2}{3k} = 0.67$		Girder No. 2 $k = 0.63$ $\frac{2}{3k} = 1.05$		Girder No. 3 $k = 0.35$ $\frac{2}{3k} = 1.90$		Girder No. 4 $k = 0.43$ $\frac{2}{3k} = 1.54$		Girder No. 5 $k = 0.46$	
		Comp.	Test	Comp.	Test	Comp.	Test	Comp.	Test	Comp.	Test
0.0	......	......	1.27	......	1.57	......	1.65	......	1.53	......	1.47
2.0	......	......	1.25	......	1.37	......	1.58	......	1.76	......	1.51
3.9	0.86	......	1.24	......	1.64	1.73	1.92	1.39	1.73	......	1.71
7.9	0.57	1.10	1.19	1.48	1.72	2.32	2.32	1.97	2.02	......	1.84
11.8	0.38	1.29	1.14	1.67	1.77	2.52	......	2.16	......	......	......
15.8	0.29	1.38	1.16	1.77	1.83	2.61	2.63	2.25	2.31	......	2.02
19.7	0.23	1.44	1.24	1.82	1.92	2.67	......	2.31	......	......	......
23.7	0.19	1.48	1.35	1.85	1.99	2.71	2.71	2.34	2.41	......	2.13
27.6	0.16	1.51	1.50	1.88	2.05	2.73	......	2.38	......	......	......
31.6	0.14	1.53	1.66	1.91	2.11	2.76	2.76	2.40	2.48	......	2.28

TABLE 3—TOTAL UNIT FORCE ON BUILDINGS AND EXTERNAL UNIT PRESSURE ON SMALL WALL AND ROOF PANELS

($2h/b = 10$)

Total force on building 5:1 ratio = $38(V/100)^2 = 38(0.875)^2 \times (V_r/100)^2 = 29(V_r/100)^2$
Maximum external pressure on wall panel = $25.5(V_r/100)^2$
Maximum external suction on wall panel = $40(V_r/100)^2$
Maximum external suction on flat roof panel = 50 to $60(V_r/100)^2$
Maximum external pressure* on front slope, pitched roof = $25(V_r/100)^2$
Maximum external suction* on front slope, pitched roof = $25(V_r/100)^2$
Maximum external suction* on lee slope, pitched roof = $15(V_r/100)^2$

*The total suction and pressure depend so much on the height to the eaves—and also the rise of the roof—that no rule can as yet be laid down for the pressure distribution. Many more wind tunnel tests on building models are needed.

The unit pressure on two trusses, based on the net area of one truss, is $C_d \times 25.5(V/100)^2$, or $25.5(1 - h/b + 2/3k)\ (V/100)^2$.

If the wind can strike the trusses at an angle to the horizontal, Table 3 (*ENR*, Oct. 11, 1934) shows an increase in the coefficient of 40 per cent at $\alpha = 30$ deg. This is an unlikely case for a bridge, but applies in full to towers. For a square tower, $h/b = 1$; hence the formula reduces to $2/3k$; but with $k = 0.20$, as for light framing, $C_d = 3.30$. Now an addition of 40 per cent to this would make the coefficient 4.60, which is more than the drag for the two members when widely spaced. Since the tests just referred to applied to only a single-truss spacing, we are unable to determine the effect and must await further tests; but it is clear that for light towers we will have a drag coefficient certainly equal to that of two separate members. The unit pressure for a coefficient of 4.00 is $102(V/100)^2$.

When the wind is at an angle, there is a component also at right angles. The coefficient just described applies to bending of the tower about one rectangular axis. For the component about the other axis we may draw from the tests for single structural members, inasmuch as we have just seen that in light towers the members act as though they were entirely separate.

Buildings

Tall buildings of rectangular plan (*ENR*, Dec. 27, 1934, Fig. 5) and height/width ratio $2 \times 5 = 10$ will have an average face wall drag coefficient of about 0.8, or a unit pressure of about $20(V/100)^2$ for wind normal to the face; tall buildings of H- or U-plan will have a coefficient of about 0.9, or a unit pressure of about $23(V/100)^2$. The suction on the lee wall will have a coefficient of about 0.7, or a unit suction of about $18(V/100)^2$. Hence the total overturning force will have a unit value of 38 to 41 $(V/100)^2$. (See Bureau of Standards, *Journal of Research*, Vol. 10, April, 1933, for a test on a model of the Empire State Building). For side walls the unit suction averages about 20 to $22.5(V/100)^2$. For wind askew the total overturning force is nearly the same as for wind normal to one face. (See *ENR*, Dec. 27, 1934.)

For varying height-width ratios we must rely on Table 1, above, for flat plates, pending further wind tunnel tests, and upon Irminger's results. For very small prisms of varying ratios, r, he found: $r = 1$ (i.e., cube), $C_d = 1.05$; $r = 2.5$, $C_d = 1.30$; $r = \infty$, $C_d = 1.85$. We also have Dryden's 5:1 prism with $C_d = 1.49$.

The maximum pressure on an individual wall panel is of course $25.5(V/100)^2$, which may act on any panel according to the wind direction. (To this must be added the internal suction or pressure as discussed below.) For wall panels adjacent to sharp corners, the local suction may conceivably be as high as $50(V/100)^2$.

Flat roofs, near the eaves, may have a maximum local suction of $50(V/100)^2$, and near pent houses or roof structures, $60(V/100)^2$, to which must be added an internal pressure due to open windows as described below, unless proper roof vents are provided.

Mansard roofs may have a pressure nearly equal to that on the face wall, with perhaps a high local suction just above a cornice. Pitched roofs* may be subjected to a pressure at the foot of the slope about equal to that on the face wall, which changes up the slope to a suction of about $20(V/100)^2$ at the ridge, for high pitch; or may be subjected entirely to suction, for low pitch. The lee slope will have an almost uniform suction of about $15(V/100)^2$. On monitors and on saw-tooth and high-low roofs the pressure and suction are much confused, but on small areas there may be either pressure or suction of as great as $40(V/100)^2$.

For barrel roofs it may be possible to base pressures upon those on a semi-cylinder, but wind-tunnel tests had better be made. (See *ENR*, Dec. 27, 1934, Fig. 2, and the text.)

Some small reduction may be assumed for the end effect of leakage from the front wall over the eave of prismatic buildings, whose effect is to reduce the height effectively exposed to the full pressure by roughly one-third of the wall width. For instance, if the height is h and the wall width is b, the effective front wall area is $b(h\text{-}b/3)$. This is a fair approximation for h/b greater than 2.0. See *ENR*, March 15, 1934, Fig. 5, and *ENR*, Dec. 27, 1934, Fig. 4; also Table I of this article for plates with *two* free ends. No such reduction seems permissible for lee-wall suction.

A great omission from structural specifications has been torsion. Pending further research, the author suggests that for prismatic buildings, square, rectangular, H-plan or otherwise, the resultant force be assumed to act at $0.08b$ off the building axis, where b is the width of the widest face wall.

Velocity determinations

Bridges—We come now to the determination of V for bridges and buildings. For bridge trusses of small depth we may use the velocity at mid-height; for spans of great depth it is advisable to determine the effective average velocity as shown in *ENR*, May 23, 1935. For high towers of suspension bridges this should certainly be done, and we will then have an average velocity of $\frac{7}{8}V_t$ for full height, where V_t is the velocity at the tower top. For wind slightly askew *each tower member* may have a drag coefficient of nearly 2.0, or a unit pressure of $(0.875)^2 \times 2.0 \times 25.5 = 39$ $(V_t/100)^2$. For the diagonals we may reduce this in proportion to $(\text{sine})^2$.

Buildings—With respect to V for buildings, in *ENR*, May 23, 1935, Table I, it was shown that the effective average velocity on the full height is 7/8 of the velocity V_r at the roof—i.e., the equivalent pressure $= (0.875)^2 = 76$ per cent. We will, therefore, base our pressures on this roof velocity; then later we will rate this in terms of the gradient velocity for the region. Our resultant will be considered to act at 55 per cent of the height from ground to roof. (See *ENR*, May 23, 1935, p. 744.) We now have a definite relationship, and the unit pressures and suctions are determined in Table 3.

If g be the ratio of gust velocity to steady velocity, say 50 per cent, then the external pressures and suctions given in Table 3 must be multiplied by $(1 + g)^2$. For very large areas g may be assumed as 20 to 25 per cent; for small areas, 50 per cent.

Table 3 applies to fully exposed structures. If there is a permanent obstruction by other buildings or by trees, there may be diminished pressure on the wall up to nearly the height of the obstruction. On the other hand the upper wall will be subjected to greater turbulence; the eddy conductivity factor K will be greater (*ENR*, May 23, 1935); the effective velocity on the upper wall will be nearer to V_r than to $7/8V_r$; hence, unless there is good reason to the contrary, it seems advisable to neglect any possible sheltering effect. The author has personal knowledge of plate-glass store fronts which repeatedly failed until the glass area was reduced, and these would have been considered as completely sheltered. Bureau of Standards Research Paper 637 discusses the effect of neighboring buildings on a model of the Empire State Building for pressure, suction and torsional moment.

Wind resistance of cylindrical bodies

Wires and Transmission Lines—The pressure on wires normal to the wind is

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*Since this paper was written the author has received a paper bearing materially on this subject: "Nouvelles Recherches sur les Forces Exercées par le Vent sur les Bâtiments," by Chr. Nøkkentved, *Jour. Sci. et Tech de l'Inst. de Mec. des Fluides de l'Univ. de Lille.*

based upon a velocity V_w active at approximately the mean height of the wires. The wire diameter is, of course, increased to include any ice coating. If the pressure on round poles is considered, they may be classed with stacks, below. Towers are to be classed with single structural members and trusses, as already discussed, with a coefficient of 2.0 for narrow towers, and a greater coefficient for wider ones. (See discussion of trusses above and Table 2.) The effective velocity on high towers is 7/8 of V_t, the velocity at the height of the tower top. Allowing for taper, we may assume that the center of pressure is at mid-height.

It has been determined that when the axis of a wire or cable is not normal to the wind, we can reduce the coefficient in proportion to the square of the sine of the angle between the wire axis and the wind. This gives a basis for computing inclined guys, also inclined members.

Wires, bare or ice-coated, lie generally in the critical region of Reynolds' Number. (See *ENR,* March 15, 1934, Fig. 2.) The value of R is $9400VD$, for V in m.p.h. and D in feet. The drag coefficient, therefore, may be anything between 1.2 and 0.3. For a small reduction in Reynolds' Number the wind force on the wire may be greatly increased; hence it is only safe to use a coefficient of 1.2, or a unit pressure on the projected diameter D of $30(V_w/100)^2$.

All wires sing at appropriate velocities, but long-span cables actually "dance" up and down by as much as 3 to 10 ft. or more at times. The cause is the same in each case, but dancing may be greatly exaggerated if the ice coating is wing-shaped, as it often is, because when the period of the wire in torsion happens to synchronize, the wing-shaped ice coating causes a periodic up and down "lift." Once, when testing deflections of a roof truss, the author used plumb bobs of rail splice plates hung on iron wires. At a certain wind velocity the torsional period of the long wires was equal to the pendular period, so that the splice plates turned 180 deg. in one swing of the pendulum. At the ends of the path they were normal to the wind, and at the path center they were aligned so as to have a negligible drag. In a light wind the action persisted for several minutes at a time. This is the same effect as that of an elongated ice coating on a horizontal wire.

Dancing has a great effect on cable stress and tower stress, and care should be taken to destroy, or to damp out such vibrations. (See *ENR,* July 12, 1934, for a similar experience with steel stacks.)

Stacks, Chimneys and Standpipes—Small steel stacks may lie above the critical region or may be within it, and this may be complicated by having different Reynolds' Numbers at different heights as the velocity varies. It is only safe to design for a coefficient of 1.2, or a pressure of $30(V/100)^2$. If V_t is the velocity at the top of a high stack standing on the ground, we then have a pressure of $23(V_t/100)^2$; if the stack is standing off the ground, the average must be computed.

Special thought should be given to swaying such as was described in *ENR,* July 12, 1934. The period of the stack alone, or of stack and supports, should be widely different from $0.27\ V/D$ or from $0.54\ V/D$, where V is the effective velocity in m.p.h., and D is the diameter in feet.

Large stacks and masonry chimneys, also standpipes, lie above the critical range and beyond any test data now available. Where the drag-coefficient curve stops in *ENR,* March 15, 1934, Fig. 2, the coefficient seems to be flattening off at about 0.3, or a unit pressure of only $7.5(V/100)^2$. This is at $R = 1{,}000{,}000$. We do know that the skin friction is negligible (*ENR,* April 25, 1935, Fig. 5); we know that in pipes, when turbulence has set in, the frictional resistance is proportional to velocity squared—i.e., the coefficient is constant or nearly so; hence we may argue that $7.5(V/100)^2$ is correct. But until more data are available, the author in his own practice will not use a coefficient of less than 1.0, or a force of $25(V/100)^2$. However, if the stack, tank, etc., are of sufficient height, we may use an effective velocity of $7/8V_t$, so that the unit force is approximately $20(V_t/100)^2$ acting on the projected diameter of the stack.

Tanks and Gasholders—Large oil tanks and gasholders lie far beyond the range of our available tests. (See the indications at the right end of Fig. 2, *ENR,* March 15, 1934.) A gasholder is a cylinder whose L/D ratio (based on twice the height) is around 5 to 10, but an oil tank may almost be called a flat disk, set edgewise to the wind, with an L/D ratio of one-half or less. An oil tank, therefore, is subject to so much leakage over the eave (except as held by the water curtain) and so little around the periphery, that it is much like a cube. Wieselsberger found a coefficient of 0.63 for very short cylinders, $L/D = 1.0$, at $R = 80{,}000$, edgewise to the wind, as against 1.20 for infinite length. A coefficient of 0.70 or a force of $18(V_r/100)^2$ seems proper until we have more data. Moreover, for such small heights the velocity at the tank roof is a small percentage of the gradient velocity of the region. (See *ENR,* March 15, 1934, Fig. 3, curve IV.)

The gasholder, on the other hand, is truly a short cylinder. (See *ENR,* March 15, 1934, Fig. 2, for cylinders with a length of five diameters.) As such it has—in the subcritical range—a lower drag coefficient than an infinite cylinder, but at $R = 1{,}000{,}000$ it appears that the short cylinder has the same coefficient as the long one. At this velocity, or diameter, the flow is turbulent around the periphery as well as over the eave.

For empty tanks and for gasholders, also for large steel stacks, we must consider also the *local unit pressure.* At the stagnation meridian we have a unit pressure of $25.5(V_r/100)^2$. On the sides, about 85 deg. from the stagnation meridian, we have a unit suction of 2 to 3 times as much, or, say, 50 to $75(V_r/100)^2$. In the lee we are quite ignorant of the local suction, but Fig. 3, *ENR,* March 15, 1934, also *ENR,* April 25, 1935, Figs. 5 and 6, show that on small models it varies from 12 to $18(V/100)^2$, above the critical range. There is, however, some evidence that pressure may develop in the lee, somewhat like the quatrefoil diagram for ideal flow. This combination of pressure on the face, suction on the flanks, and low suction (or perhaps pressure) in the lee may cause serious stresses in the tank structure. In *ENR,* July 12, 1934, the author reported a flattening of the Gould St. Station stacks of +1 in. and —1 in. due to this cause. Full-scale tests are badly needed. The matter of internal suction in such structures also must not be overlooked.

Elevated Tanks—Elevated tanks are short cylinders with height/diameter ratio of, say, 3, but the platform and railing and, to a less extent, the eave act like end plates to cause a more nearly two-dimensional flow about the cylindrical tank body. It appears to be safe to use $C_d = 1.0$, or a total unit force of $25.5(V_r/100)^2$. The columns, bracing and riser pipe fall into classes that have already been described above. A cone roof effectively sheds the wind, and also an ellipsoidal or hemispherical bottom, hence we can add one-half of their combined height to the height of the cylindrical body. For greater precision we may treat the bottom as being a half-sphere or a half-ellipsoid, with drag coefficients as given in *ENR,* March 15, 1934.

Internal pressure or suction

Were we considering only the overturning force on structures we would not be concerned with conditions within, because the forces on the walls cancel out. For an open shed the forces cannot cancel.

Buildings—When we consider the strength of walls and roof, we must also consider the internal pressure. In general, internal partititions are so leaky that we may neglect them, and consider the internal pressure to be uniform throughout the building. If a special case of a tight partition should arise, each room can be treated separately.

The leakage through a small opening is proportional to the pressure difference at the point. (See *ENR,* December 27, 1934, p. 818.) With a multitude of leakage holes, or windows, the internal pressure must be the integrated effect of all openings, some leaking inward, some outward. In a constant wind, with no gusts and no corner eddies, the internal pressure will assume this value and then remain unchanged; in a gusty wind, it will be constantly changing as the building breathes, and we must assume an average condition by neglecting them. On the pressure face the relatively high pressure acts on the one face only, whereas we have suction on the three other faces, so that the resultant effect is most generally an internal suction. Irminger and Nøkkentved have tested a number of small models and find an internal suction generally of about $0.30q$ to $0.40q$, or 0.30 to $0.40 \times 0.002558V^2 = 7.5$ to $10(V/100)^2$. As a yardstick by which to measure this, the normal barometric pressure is $14.7 \times 144 = 2{,}120$ lb. per sq.ft., so that only a person with very sensitive ears would be aware of a change of even ½ of 1 per cent. However, this means an addition of 40 per cent to the stagnation pressure on the windward wall, or a 50 per cent reduction in the suction on the lee wall.

If, however, we have open windows or vents, the effect is different. One large window open at the stagnation meridian will in a few moments cause an internal *pressure* of $25(V/100)^2$; a group of windward wall windows will reduce this to a factor of about 20; but a single large window in an area of high suction may alter the pressure to a unit suction greater than $20(V/100)^2$. In an open shed with three walls we may have an internal pressure on these walls of about 20, or a suction of about $20(V/100)^2$, whereas the external pressure may be about the same as for a closed building.

In regions subject to tornados we have another condition. If we assume a barometric drop of only 5 per cent (*ENR*, April 25, 1935, p. 585, where 13 per cent is recorded), there would be an outward force on the outer walls of 100 lb. per sq.ft., provided the windows were closed and the sash and glass did not fail. If the tornado is traveling at 60 m.p.h., or 88 ft. per sec., and if we assume $S = 0$ (*ENR*, April 25, 1935), which is certainly conservative, and if the radius of maximum velocity is 250 ft., then we can consider that this barometric drop takes place in 3 sec. Taking a small cubical building, 30x30x30 ft., having 27,000 cu.ft. of air volume, 3,600 sq.ft. of wall area, with one window per 100 sq.ft., each window having a ⅛-in. leakage crack all around it, thus giving a leakage area of about ⅓ of 1 per cent; allowing an expansion of the air of 5 per cent, or 1,350 cu.ft.; assuming for the sake of simplicity a uniform rate of leakage; then we would need a leakage velocity for this air of 270 ft. in 3 sec., or 90 ft. per sec., or 8.8 lb. per sq.ft. For a low building, larger in plan, the pressure will greatly exceed this. If the rate is determined mathematically, it will be found to exceed these figures considerably. Now, added to this is the suction effect from the very high tangential velocity, which may approximate 200 m.p.h., for which $q = 102$ lb. per sq.ft. (*ENR*, May 9, 1935, Table IV), and we have a suction of $0.30 \times 102 = 30$ lb. per sq.ft., or a total combined wall suction of 140 lb. per sq.ft. or more. Further, if S is not zero, we will have a radial component of velocity, so that the resultant velocity will be further increased somewhat.

To summarize: In tornado regions it is difficult to make any rational design, unless the sash are designed to fail outward at some given low pressure. Elsewhere, it seems safe to design wall panels for $1.8q$, or $45(V/100)^2$, total pressure, or $65(V/100)^2$ total suction; and since the panel may be at any height, the value of V will be chosen accordingly. Of course the maximum value will be near the roof, hence we can determine upon $45(V_r/100)^2$. Some small areas of roof near roof structures may be subjected to $2.8q$, or $70(V_r/100)^2$. For large wall areas the inward total force may be considered as $1.6q$, or $40(V_r/100)^2$, and the total outward force as $45(V_r/100)^2$. For roof trusses under flat roofs an uplift of $1.6q$, or $40(V_r/100)^2$ should be considered (Table 3).

With these figures before one, it is not difficult to see why so many roofs are torn off in every heavy thunderstorm. Seldom has any consideration been given to roof suction, though the newspapers carry headlines describing the damage done to property and the occasional injury to human life.

Chimneys—It is a known fact that chimneys draw better in a wind because of the suction caused at the chine. However, eddies and deflected flow caused by a roof peak, eave or gable may also cause a down-draft, hence the heed for extension well above near-by obstacles.

Tanks and Gasholders—In the Göttingen test noted in *ENR*, March 15, 1934, Fig. 3, Curve IV, it was found that the internal suction varied widely according to the location of the peak cupola vent and the eave vents. We will assume here a suction of $0.30 \times 25.5 = 7.5(V_r/100)^2$. Even when filled with oil water or gas, the hydrostatic head will be reduced by the internal suction; hence suction must be considered.

TABLE 4—TOTAL COMBINED EXTERNAL AND INTERNAL UNIT INWARD AND OUTWARD PRESSURE ON WALLS AND ROOFS

Buildings

Small wall panels, max. inward $= 45(V_r/100)^2$
Small wall panels, max. outward $= 65(V_r/100)^2$
Small roof panels, max. upward $= 70(V_r/100)^2$*
Large wall areas, max. inward $= 40(V_r/100)^2$
Large wall areas, max. outward $= 45(V_r/100)^2$
Roof trusses, flat roofs, max. upward $= 40(V_r/100)^2$

Tanks, Water Towers and Gasholders

(Pending Large-Scale Tests)

Max. inward at stagnation meridian $= 33(V_r/100)^2$
Max. outward on flanks $= (2.5 - 0.3) \times 25.5 = 56(V_r/100)^2$
Max. outward on lee side $= (0.6 - 0.3) \times 25.5 = 7.5(V_r/100)^2$

*Near roof structures.

Gradient velocity

In all that heretofore has been said, the pressure has been associated with a velocity at the roof of a building or tank, the top of a tower, the mid-height of a bridge or some other height, but no mention has been made of what velocity is to be used for V_r, or V_t, etc., in miles per hour.

These velocities must be related to some other velocity that is characteristic of the city or of the region, and that can be determined from records of the city and of others near by, so as to eliminate the effects of bad anemometer exposure. This other velocity is the gradient velocity, discussed in *ENR*, May 9, 1935. (The squall wind of a thunderstorm is independent of the regional gradient velocity.)

The gradient velocity must be determined for each city first, as described below, but when an engineer in each city of a group (such as Philadelphia, Baltimore and Washington, the Great Lakes cities, the Gulf Coast cities, or New York City and the adjacent cities of Connecticut and New Jersey) has determined his local gradient velocity, it will by comparison be possible to "iron out" the local peculiarities.

The gradient velocity differs in every region. The Atlantic Coast cities, such as the seashore resorts, have higher velocities than those cities at the head of navigation. The Lehigh Valley, Hagerstown Valley and Shenandoah Valley cities are influenced by the mountains. The Great Lakes cities have more open conditions and also lie much more directly in the paths frequented by the cyclonic and anti-cyclonic disturbances; the Gulf Coast and South Atlantic cities are influenced greatly by tropical hurricanes; the western plains cities and the Pacific Coast cities are in entirely different classes. A city on an open plain has less frictional resistance to retard the winds, and one on an ocean or lake shore has little or no resistance. The houses and buildings within a city are affected by the "coastal effect" (*ENR*, May 23, 1935) as opposed to those on the outskirts. For instance, houses on the edge of Nantucket Village, with a mile or two of undulating, almost treeless moor and then the Atlantic, are buffeted by high winds, when those in the village are not affected.

The author cannot give a gradient velocity for each city, but he will attempt to show engineers in each region how to determine it themselves. Table V, *ENR*, May 9, 1935, shows probable velocities at Baltimore for 5-min. periods and for 50 per cent gusts, at an elevation of 215 ft. above tide level, and at approximately 200 ft. above the ground. We can call the height 200 ft. and then from Table I, *ENR*, May 9, 1935, we find the velocity at 200 ft. is

75 per cent of the gradient velocity. On this basis, then, the probable gradient velocities at Baltimore are given in Table 5, although some of these winds were thunder squalls.

TABLE 5—PROBABLE GRADIENT VELOCITIES G AT BALTIMORE

Y, in years	=	1	2	3	5	8	10	20	50	7	100
V_{200}, in m.p.h., 5 min.	=	42	46	49	51	55	57	60	66	6	70
G, in m.p.h., 5 min.	=	56	61	65	68	73	76	80	88	9	93

TABLE 6—DESIGN DATA FOR STRUCTURES IN BALTIMORE OR OVER THE CHESAPEA E BAY

(See also Tables 3 and 4)

Buildings, of the Size Noted Above

Unit total force on projected area of the above building (acting at 55 per cent of height) = $29(0.70)^2$ = 14 lb per sq ft
Torsional moment due to this force acting at 0.08×50 = 4 ft from axis
Small wall panels, max inward = $45(0.70)^2$ = 22 lb per sq.ft.
Small wall panels, max. outward = $65(0.70)^2$ = 32 lb. per sq.ft.
Small roof panels, max. upward near roof structures = $70(0.70)^2$ = 35 lb. per sq.ft.
Large wall areas, max. inward = $40(0.70)^2$ = 20 lb. per sq.ft.
Large wall areas, max. outward = $45(0.70)^2$ = 22 lb. per sq.ft.
Roof trusses, flat roofs, max. upward = $45(0.70)^2$ = 22 lb. per sq.ft.
For pitched roofs, add $20(0.70)^2$ = 10 lb. per sq.ft. to values of Table 3.
For building on open, level farm land, use 88 m.p.h. instead of 70 m p.h.

Standpipes and Gasholders, Height 200 ft. (Pending Large-Scale Tests)

Max. pressure at stagnation meridian = $33(0.70)^2$ = 16 lb. per sq.ft.
Max. suction on flanks = $56(0.70)^2$ = 28 lb. per sq.ft.
Max. suction in lee = $7.5\,(0.70)^2$ = 4 lb. per sq.ft.

N.B. Even when they are filled with water or gas, the hydrostatic pressure inside will be reduced by the amount of the internal suction; hence the suction will be effective in increasing or decreasing the outside wind pressure or suction. This internal suction depends very greatly in its amount upon whether the roof venting is at the peak cupola or by vents distributed just under the eaves. Further tests are needed, especially full scale. For structures in open country use 88 m.p.h. instead of 70 m.p.h.

Transmission Line

(k = 0.25 for tower. See discussion of trusses.)

Unit total force on tower = $(0.875)^2 \times 68(0.550)^2$ = 15 lb. per sq.ft. acting on projected area of one face at 50 per cent of the height.
Unit total force on cable = $1.2 \times 25.5(0.50)^2$ = 8 lb. per sq.ft. acting on projected area of cable and ice coating
Provision must be made also against dancing of the cables and the high stress that results. For lines in open country use 65 m.p.h. and 60 m.p.h. respectively.

Bridge over Chesapeake Bay

Unit pressure on two trusses = $59.6(0.88)^2$ = 46 lb. per sq.ft.
(Solidity ratio k = 0.40, see Table 2) based on projected area of one truss only.
Unit pressure on projected area of floor structure = $25.5(0.88)^2$ = 20 lb. per sq.ft.

Note: All of the above unit forces and *external* unit pressures must be further multiplied by $(1 + g)^2$ to allow for gusts, where g is 0.20 to 0.25 for large buildings, structures or bridges and 0.50 for small areas.

We thus see that there is little prospect of a gradient velocity at 1,250 ft. above ground, in the vicinity of Baltimore, of quite 100 m.p.h. Such records as the author has for Washington seem to imply the same. Over the Chesapeake Bay, however, about 20 miles to the east, or on the Atlantic Coast of Maryland, the surface velocities are much higher, as indicated by much more extensive damage that results from the tropical hurricanes that pass northward, and from the winter winds.

Design examples

For example, assume first a building in Baltimore with a height of 200 ft., for which the 100-year maximum velocity will be 70 m.p.h. at its roof. This is V_r and will determine the unit pressure for wall and roof panels, but for overturning force we must take account of the height/width ratio. Let us assume the building to be 50x50 ft. in plan, so that this ratio is $2 \times 200 \div 50 = 8$. This value being close to $2 \times 5 = 10$, we may (for simplicity) use the figures given in Table 3.

If, on the other hand, the width were greater so that the elongation ratio would be less, we could make some reduction in the shape factor according to Table 1 above for flat plates.

Assume next a standpipe or gasholder 200 ft. high, with $V_r = 70$ m.p.h.

Third, for a bridge over the Chesapeake Bay we must consider that the gradient velocity is reached at much lower heights above the surface than over cities. See *ENR*, May 23, 1935, for observations at sea by Bryant, and note the small value of the eddy-conductivity coefficient K. This yields a curve that lies close in the corner of the diagram and signifies a very rapid increase in velocity near the surface and the near attainment of the full value at, say, 250-ft. elevation. If, therefore, we take a bridge whose mid-height is 175 ft. above the water, we find the velocity to be $(175/250)^{0.167}G = 0.94 \times 93 = 88$ m.p.h.

For a transmission line, if we consider that it is safe to use the maximum velocity for a 20-year period, we would find a velocity, V_t, at the top of a 100-ft. tower amounting to 55 m.p.h., and for the cables with an average height of 60 ft. amounting to 50 m.p.h. The design data, therefore, would be as shown in Table 6.

TABLE 7—RECORDED HIGH WIND VELOCITIES

Locality	Reference	Velocity m.p.h.	Remarks
West Indies..............	Inst. Rad. Engrs. 1923	120–140	"Recent hurricanes" at Swan Is. and Cape San Antonio
Mt. Tamalpais, Calif.......	Weather Bureau	75	Steady; May 18, 1915
Mt. Tamalpais, Calif......	Weather Bureau	148	Gusts; May 18, 1915
British Isles..............	*Proc.*, Inst. C.E. 1922–3	75	Steady high winds
British Isles..............	*Proc.*, Inst. C.E. 1922–3	85–100	Gusts, very rare
British India..............	*Proc.*, Inst. C.E. 1922–3	100	One case 151 m.p.h.
British India..............	*Proc.*, Inst. C.E. 1922–3	165–174	Max. gusts; 174 is doubtful
St. Louis, Mo..............	*Trans.*, A.S.C.E.	200	Estimated in 1896 tornado
Mt. Washington, N. H.....	*ENR*, May 10, 1934	231 max.	Probable error ± 10 m.p.h.; max. mile, 225 m.p.h.; max. 5-min., 188 m.p.h.; max. 1-hr., 173 m.p.h.; aver. 24-hr., 129 m.p.h.

Note: It should be borne well in mind, however, that the pressure and suction are directly proportional to $q = \frac{1}{2}\rho V^2$; hence on high mountains or in high level country, as for example in the Rocky Mountain states, the value 0.002558 must be reduced proportionally according to Table 3, *ENR*, May 9, 1935, in which the weight per 1,000 cu.ft. is given. The reduction from sea level to 10,000-ft. elevation averages 30 per cent, or on the average 3 per cent per 1,000 ft., or 1 per cent per 100 meters approx.

Recorded velocities and specified pressures

Tables 7 and 8 give the recorded high wind velocities and some specified high design pressures. For other data on velocities reference is also made to articles by Robins Fleming (*ENR*, Jan. 28, 1915, and March 16, 1922) and by P. K. Schuyler (*ENR*, Sept. 1, 1927).

TABLE 8—SPECIFIED HIGH PRESSURES FOR RADIO TOWERS

Owner	Reference	Pressure on Projected Area, 1 Face, Lb. Per Sq.Ft.
Radio Corp. of Am.	*ENR*, Mar.16, 1923	60, upper 300 ft. 45, lower part
Marconi Wireless Co.	*Proc.*, U. S. Nav Inst., 1920	60
U. S. Navy	*Proc.*, U. S. Nav. Inst., 1920	45
Hurricane belt	Inst. Rad. Engrs., 1923	102, on top story
Italian Naval Sta., Rome	Inst. Rad. Engrs.,1920	43.2, entire tower 61.5, 714-ft. mast
Eiffel Tower	*ENR*, Mar. 16, 1923	61.4, whole tower, varying from 81.9 lb. at top to 40.9 at bottom
Imperial Japanese Govt., Tokyo	*ENR*, Aug. 4, 1921	From 126 lb. at top to 60 at bottom on two-thirds of projected area
Germany, Naven	Z.d.v. *Deut.* Ing.	71.7 lb. at top of 853-ft tower

Conclusion

The author has attempted to correlate a great mass of experimental data for the benefit of the civil engineer, and to put it into the form of a specification. Many other engineers must collect data on regional velocities before these papers will have their fullest value. Many model tests in wind tunnels must be made before some questions can be answered or some points settled. Data on full-size structures are needed before we can lay down definite specifications for tanks, standpipes, gasholders, or even chimneys and stacks. The heating, ventilating and air-conditioning engineer needs much more data from models, to determine the heat loss due to breathing, just as the civil engineer needs it for determining wall and roof strengths.

There are a few salient points in these articles. For the region of Baltimore and Washington it appears that a total force of 30 lb. per sq.ft. on buildings, and 30 lb. on 1½ times the area of one bridge truss are safe, in general. But these figures are by no means correct for certain seacoast locations subject to tropical hurricanes, for tornado regions, for buildings on mountains or even large hills, and for other places.

However, possibly no engineer yet has made proper provision for *outward* pressure on walls and *upward* pressure on roofs, and none has made provision for torsion of the building as a whole.

If nothing else results from these articles, the author hopes that these two elements will hereafter get proper consideration. Some roofs blow off in every violent storm, with much loss of money and occasional loss of life. This can be eliminated.

The author appreciates the great interest that engineers in many cities have displayed in the articles. He is indebted to his associate, Willard W. Troxell, for many helpful computations, suggestions and criticisms; to the National Advisory Committee for Aeronautics for the loan of much material; to the various investigators whose results he has recorded. Lack of space prevents the inclusion of many more data.

Overtopping of Small Dam Causes Flood in Italy

Excessive rainfall results in overtopping and complete collapse of the smaller of the two Zerbino dams above Molare on the Orba River in Italy—Fast erosion of soft rock believed a contributing factor

FAILURE of a dam on the Orba River above Molare in Italy and wide destruction in the river valley were events widely reported in the press of the world on Aug. 14. As there was only one dam of any considerable size on the Orba River, it was assumed by those in this country having knowledge of Italian dams that it was that structure, the Molare Dam, or more accurately, the Zerbino Dam that had failed. Hence the description of that dam published in our issue of Aug. 22, p. 272. It now appears that that assumption was incorrect, that the dam stood, although apparently overtopped by the unprecedented flood, and that the dam which failed was a small dam in a side valley leading from the reservoir area into the river canyon at a bend below the main dam.

Following the report of the failure of the Molare Dam, this journal cabled to the Italian Ministry of Public Works for a report as to cause of failure of the dam and subsequently cabled E. Probst, former editor of *Bauingenieur*, who had visited the dam following the flood, for a report. Dr. Probst's report follows. As will be seen from a review of it, the report raises directly or by implication several questions that it does not answer. Some of them may be answered as the result of further inquiries addressed to Dr. Probst, but though incomplete in this respect the report is so significant that it appears desirable to publish it in its present form. —EDITOR.

By E. Probst
Karlsruhe, Germany

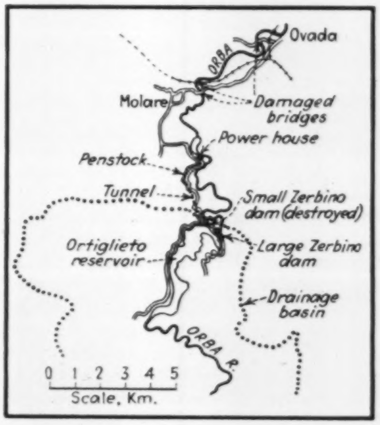
ON AUGUST 13, 1935, a dam above Molare in northern Italy was destroyed immediately after a succession of intense rains of cloudburst character. The destruction resulting from the failure was very great. Official Italian reports put the loss of life at more than 100; farms were carried away, and a number of buildings and other structures of various sizes were destroyed either wholly or in part.

This occurrence constitutes the third major dam disaster of recent years. The preceding cases, the failure of the Gleno Dam in northern Italy in 1923 and the destruction of the St. Francis Dam in California involved structures considerably larger than the Molare Dam.

Engineers concerned with dam construction are naturally interested to learn what may be concluded from experiences of the present disaster with respect to the future. The author, who visited the site, therefore gives in the following a brief description of the plant and his observations. Some of the data given are taken from *L'Energia Elettrica,* Milano, 1925-26.

The power house which supplies current to the port city of Genoa, lying about 50 km. to the south, is on the Orba, tributary of the Po. Two dams, the larger called Zerbino and the smaller one Alla Sella Zerbino, formed the Ortiglieto Reservoir, whose drainage area is about 141 sq.km. A pressure tunnel 3 km. long and a pressure pipe line below lead to the power house, which includes two units of 9,000 kw. at a discharge of

FIG. 1—ORBA RIVER VALLEY in Italy, showing the location of the large and small Zerbino dams of the Molare power development.



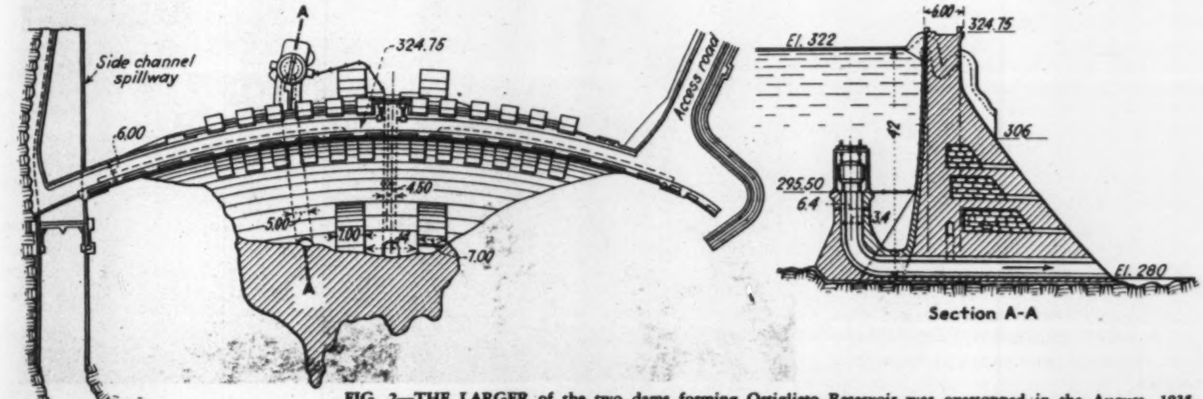


FIG. 2—THE LARGER of the two dams forming Ortiglieto Reservoir was overtopped in the August, 1935, flood but did not fail. [The shaded area below the dam is believed to indicate where erosion occurred.—Editor.]

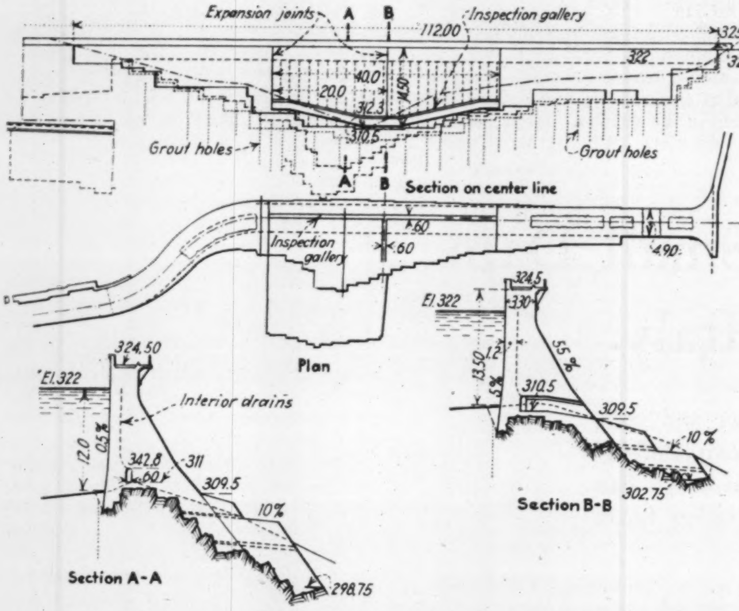


FIG. 3—THE SMALL ZERBINO DAM shown here in plan, elevation and section was overtopped and failed.

10 to 12.3 cu.m. per sec. (350 to 430 sec.-ft.).

The larger dam, built in 1923, is a curved gravity structure built of Cyclopean concrete and has a height by no means unusually large for modern conditions. The lower part of the cross-section contains three recesses filled with dry masonry, which are drained as shown in Fig. 2. The structure has a special surface coating, drains on the water side, and inspection galleries, much as may be found in other dams of the kind. It was described in more detail in *ENR*, Aug. 22, 1935, p. 272.

The flood-discharge facilities of this dam comprise twelve automatic siphons each 2x3 m. in cross-section, with a total capacity of 500 cu.m. per sec. (17,650 sec.-ft.); a sluiceway of 55 cu. m. per sec. capacity and a second one at higher level (Fig. 2), with an automatic outlet controlled by a cylinder valve having 150 cu.m. per sec. capacity, which latter is said to have failed to operate at the time; and finally a side spillway 68 m. long. The failure of operation of the upper sluice is of course of no present importance. [Probably because of its small capacity in relation to the flood—EDITOR.].

Smaller dam failed

The smaller of the two dams (Fig. 3), a gravity dam designed for a water height of only 12 m., was destroyed and caused the catastrophe.

It is to be assumed that this smaller dam was built in the same manner and of the same material as the larger one. Fig. 3 shows expansion joints spaced 20 m., drainage provision and inspection galleries.

The pressure tunnel supplying the power plant has its upper end near the smaller dam. The penstock pipes below the tunnel remained uninjured down to the power house, while the power house itself was carried away by the flood, leaving only foundations and machinery.

The manner in which the power plant was swept away and the destruction of bridges as far as 14 km. below the dam show with what tremendous violence the overloaded reservoir was emptied after the smaller dam gave way. It is stated that the actual break occurred almost instantaneously.

While the official investigations are still in progress, the author nevertheless desires to comment on certain questions arising from an inspection of the destroyed structures.

Undoubtedly the collapse of the small dam was the direct cause of the disaster, even though the extent of the destructive effects was wholly disproportionate to the small magnitude of the structure in question.

Turning to the construction of the dam, it is worth emphasizing that a check of the static design of the dam section would unquestionably show it to be subject to no criticism according to modern concepts and methods, provided the basic assumptions are satisfied. Just what is the situation as to the essential security elements of the dam from the viewpoint of actual execution?

Looking at the profile of the dam cross-section (Fig. 5) it will be seen that the conformation of the ground demanded a deep effective foundation in order to assure adequate safety against overturning and sliding. The cross-sections of the structure (Fig. 3) reveal that the designer endeavored to satisfy this requirement. In addition, extensive grouting of the underlying rock was carried out, as indicated in Fig. 3.

The photograph which the author was able to make from the water side (Fig. 7) shows the conditions at the site of the collapse. At the upper right one may see the only remnant of the structure, its connection with the roadway leading to the larger dam. Nothing was discoverable either of the body of the collapsed dam or of the foundation as built. But it is possible to recognize in Fig. 7 the poor character of the fissured foundation rock. For complete clearing up of the causes of the disaster, therefore, a thorough examination of the character of the ground would be of value.

FIG. 4—HIGHWAY BRIDGE near Ovada, about 14 km. below the dam, that was destroyed by the flood.

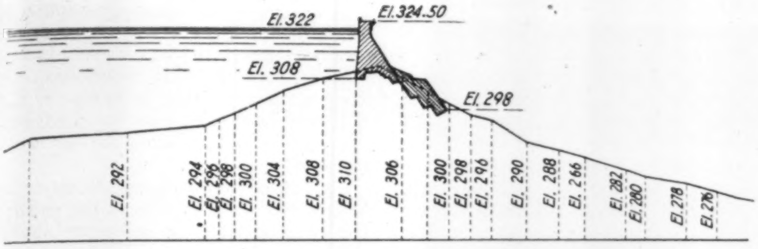


FIG. 5—A PROFILE of the valley shut off by the small Zerbino dam shows that its foundations had to be unusually sound and tight to insure its safety.

Can grouting be expected to be effective in rock of the kind revealed by the collapse of the dam?

Did the foundation as built correspond to a loading beyond normal reservoir level to a surcharge as great as that resulting from the current year's floods?

Was the foundation of the dam adequately protected against underscour by the overfall of an intense flood?

Examination of these questions would help to determine what part the design and construction of the small dam had in the disaster.

Flood-discharge provisions

A point of special interest is whether the provision for flood discharge met the requirements of the case.

The diversion was proportioned for the ordinary high water of 170 cu.m. per sec. (6,000 sec.-ft.). It was known that at twenty-year intervals a flood of 800 cu.m. per sec. (28,200 sec.-ft.) was to be expected, but the risk of such exceptional floods was taken.

[What Dr. Probst refers to here as the diversion (Umleitung) is not clear. In the book of N. Kelen referred to below it is called a diversion tunnel; but if it was a diversion tunnel used during construction, it is difficult to understand why it was in service in 1928, five years after the dam was built, or what its bearing is on the present happening.—EDITOR.]

In this connection it is necessary to refer to an occurrence mentioned by Kelen in his book "Gewichtsstaumauern und Massive Wehre," p. 135. The plant had a tunnel 6 m. wide and 4.50 m. high, of horseshoe section, fully lined with concrete. While designed for a discharge of 170 cu.m. per sec., it had to carry a discharge of 300 cu.m. per sec. during a flood in November, 1928, with a velocity of 12 m. per sec. The consequence was that the water at the entrance stood 14 to 15 m. above the crown of the tunnel. When the water went down, the invert of the tunnel showed scouring up to 4-m. depth. This destructive scouring had begun at the discharge end of the tunnel and had worked gradually upstream to three-fourths of the length of the tunnel.

This observation must give pause. According to Kelen's data there was no strong portal at the discharge end of the tunnel nor other provision against erosive scour, such as must be considered necessary in such cases. The deep scouring further permits of certain conclusions as to the character of the rock, which accordingly make desirable a careful check of the quality of the foundation rock of the dam.

With storage up to the contemplated reservoir level (El. 322), the design provided for a storage volume of 18,000,000 cu.m. of water. Deducting from this quantity the amount of water that remained in the basin up to the foot of the smaller dam, something more than 10,000,000 cu.m. of water remained to be discharged. The flood-discharge provisions of the large dam and the two turbines were able to take care of 880 cu.m. per sec., (31,000 sec.-ft.), which would correspond to 6.25 cu.m. per sec. per sq. km. (571 sec.-ft. per sq.mi.). But the volume of stored water just before the catastrophe was materially larger, as the normal storage height of El. 322 (in meters) was considerably exceeded and water overtopped the crest of the dam. (Dam crest at about El. 325.) According to observation made

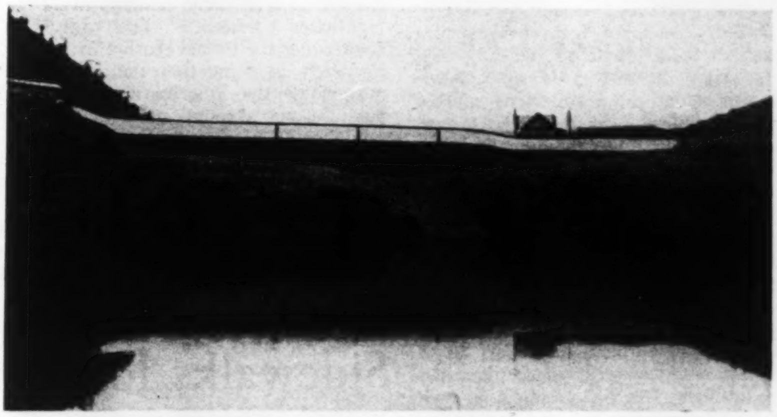


FIG. 6—THE SMALL ZERBINO DAM before it failed. The water line is indicated by the discoloration on the upstream face. [This cut is a reproduction of a halftone that appears to have been made from a retouched photograph. What the black lines indicate is not known definitely, but they appear to be the expansion joints at the ends and center of the main central part of the dam.—Editor.]

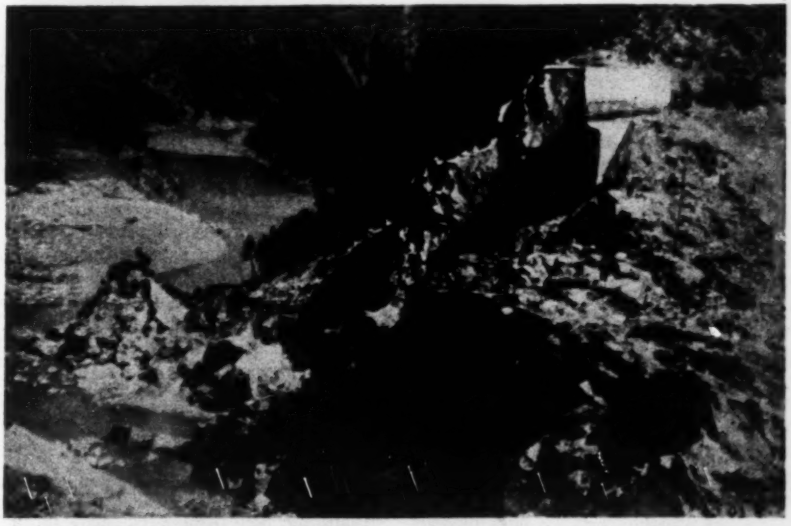


FIG. 7—ALL THAT REMAINS of the small Zerbino Dam is the walled fill supporting the approach road leading to the larger dam, shown at the extreme left in Fig. 3. The black water line, shown in Fig. 6, may be seen on the wall. This view is taken looking out into the river gorge below the main dam.

during the flood of 1928, the water level had been raised 2 to 3 m. For the present flood one may therefore assume, as does DuBois in "Bulletin Téchnique de la Suisse Romande" (August, 1935), a mean storage to El. 327. In this case one finds an additional discharge of about 1,350 cu.m. per sec. for the large and small dams, on the basis of a crest length of 160 m. for the large and 80 m. for the small dam. Accordingly, the volume of water to be carried off is increased from 6.25 cu.m. per sec. to more than 15 cu.m. per sec. (1,377 sec.-ft. per sq.mi.), which DuBois justly described as unusually high.

With increase of storage to El. 327 as compared with normal reservoir level of 322, there occurs also a surcharge of about 5 m. on the large dam, which in relation to its total height of 42 m. is not particularly significant. In the case of the small dam, which was only 12 m. high, this figure means an overload of almost 50 per cent.

DuBois concludes from his calculations that the overloading and the possible absence of safeguards against underscour from the tremendous masses of water falling over the smaller dam caused the collapse of the dam; in other words, that the small dam overturned, as has been asserted by some.

This view becomes more probable when one considers the effects of the 1928 flood. The overflow and the resulting overload alone would not have overtaxed the smaller dam, even though its margin of safety would have been reduced, provided the assumptions as to foundation and material of the dam had been fulfilled. But if the foundation rock was of similarly low resistance to scour as revealed in the tunnel in the 1928 flood, and if on the downstream side of the dam there was no adequately resistant and extensive receiving basin for a heavy overflood as that of August, the essential requirements for the stability of the smaller dam according to the design were no longer met.

* * *

DR. PROBST'S MANUSCRIPT was forwarded for review to Robert A. Sutherland (who wrote the Molare Dam article of Aug. 22) in the hope that he might be able to cast some light on questions left open in Dr. Probst's report. His reply follows. —EDITOR.

I WAS GLAD of the opportunity of reading the interesting report by Dr. Probst on the failure of the smaller of the two dams at Molare, Italy. The following remarks may help you to form a clearer understanding of the circumstances of the failure.

The rock on which the small dam is built is undoubtedly similar to that underlying the larger dam, namely a serpentine schist. A large part of the Ligurian Apennines is a schistose rock, of various kinds, and a number of dams in that locality are on this type of rock, including the Gorzente Dam, on the Gorzente River, built 1883, the Lago Lavezze Dam on the same river, and the Badana and Lavagnina No. 1 and No. 2 dams on tributaries of the Gorzente River, all in connection with the Genoa aqueduct "Ferrari Galliera." The geological structure of this region has been considerably studied, in connection both with reservoirs and with long railroad tunnels leading out from Genoa. The construction of one dam in this region was to my knowledge condemned by two eminent geologists, although the reason was not so much defective strength of rock as possible interference with a railroad tunnel, since the metamorphic stratification had been considerably disturbed by later geological changes.

The "Umleitung" mentioned is to my mind clearly a diversion tunnel, although I have no direct information on this tunnel. The only other thing it could be is the side-channel spillway, but this is separately referred to as the "seitlicher Uberfall." The object of mentioning the tunnel erosion in 1928 is obviously to show that the rock (and presumably the concrete made from it, possibly on account of deficiency of sand) could not stand erosion by flowing water, leading to the belief that water flowing over the small dam undermined the toe of the dam and led to tipping and sliding.

A further clue to the quality of rock is contained in an Italian description of the dam, which after stating that the pressure tunnel to the power plant is entirely concrete-lined, continues, "in some tracts the lining assumes the role of a real reinforced-concrete pipe, capable itself of withstanding the full water pressure."

Two other points appear to me to be of interest. The failure of the smaller dam was capable of releasing almost half the total water stored, even at normal water level, *viz.* 8,000,000 cu.m. out of 18,000,000. Assuming that the water level had risen 5 m. above normal at the time of failure, as stated by Dr. Probst, the total storage would be increased to about 24,000,000 cu.m., of which the smaller dam on failure would release 14,000,000, or over half. Erosion of the rock where the small dam had stood released still more water. The potentiality for disaster of the small dam was therefore in far greater ratio than its comparatively small height would indicate.

The flood runoff estimated by Probst as 1,377 sec.-ft. per sq.mi. of catchment (58 sq.mi.) is certainly extraordinarily high. Creager and Justin, in "Hydroelectric Handbook," p. 48, cite Devil's Stream, Iowa, with a recorded flood runoff of 1,300 sec.-ft. per sq.mi. in a catchment of 143 sq.mi. No other recorded runoff for a catchment of comparable size approaches these figures.

Sidewalks for State Roads in Massachusetts

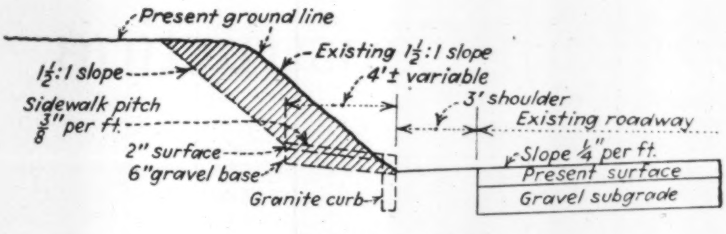
IN ITS ACT of 1935 "to alleviate unemployment" and provide $12,000,000 for public works for that purpose, the legislature of Massachusetts definitely allocated $4,000,000 for the construction of sidewalks on state highways. Planning for this sidewalk construction program and development of methods of procedure were placed in the hands of the state department of public works by the act. Arrangements were made with the Works Progress Administration at Washington for federal funds to do the rough grading for such mileage as the WPA would undertake, between 500 and 1,000 miles. The department of public works then set up an organization to plan the work and to construct the surfacing by force account. No part of the work except the furnishing of materials will be let to contract.

Sidewalk plan

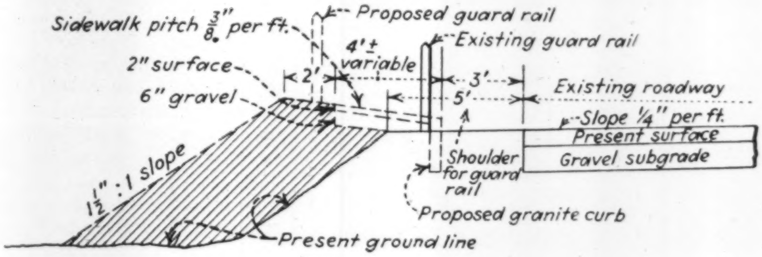
Planning has been predicated on a 500-mile program and as much greater mileage as the relief-works allotments may make possible. The walks will range in width from 2-ft. footpaths in some locations to 5- to 8-ft. sidewalks in other locations. No universal standards were set for location or width; the widths were determined on the basis of traffic counts and the location by right-of-way and ground conditions. In general, the location borders the roadway shoulder, the width is 4 ft., and the surface is a hard surface of bituminous or cement concrete. The sketches indicate typical plans for cut and fill.

In general, the sidewalk structure and dimensions require no description beyond that given by the drawings. A bituminous concrete surfacing (premixed) will be standard, but this may be changed to cement concrete where the local development makes it more fitting; also for the same reason the surface widths may be increased to 5 ft. or even to 8 ft.

Again, curbs will not always be required and where required will more often be inclined instead of vertical as shown, the slant being away from the roadway surfacing. It will be noted that the guard-rail on fills is relocated at the outer edge of the sidewalk. It must be understood that the plans



Section in Cut



Section in Fill

SIDEWALK DESIGNS proposed for state roads of Massachusetts. Construction started with $4,000,000 state appropriation and expected WPA aid.

shown are averages with fairly wide extremes in dimensions and location.

As provided by the law, the administration of sidewalk construction is in the state department of public works. With the allotment of the funds the department organized a section of the maintenance division, with J. A. McCarthy in charge and R. E. Pyne as assistant, to have control management of the sidewalk work with the district highway engineers in direct charge. G. H. Delano is engineer of the maintenance division.

The first procedure was a call upon the district engineers to submit estimates and plans for sidewalk projects on the state roads in their districts and from these to recommend a preferential list. The reports submitted presented plans of the sections proposed between numbered stations and a quantity and cost estimate for each project. From these reports the main office approved the projects to be undertaken. This approval was based on recommendations of the district engineer, on knowledge of local conditions and on pedestrian traffic counts and records of accident frequency.

With the projects selected, management of the work calls primarily for careful records. The construction is simple and mostly hand work except for hauling. As both grading, curb-setting and surfacing are hired-labor operations, accurate accounting by the district engineers is vital both for controlling costs and performance. A standard recording system has been drawn up including (1) a daily report, (2) daily ledger, (2A) payroll record back of daily ledger, (3) cost ledger, (4) material record, (5) weekly quantity and cost sheet, (6) district-office weekly-report summary, (7) timekeeper's book, (8) overhead items, and (9) final report.

The details of the individual records have no place here; the important fact to notice is that these records give the supervising heads of operations the information necessary to check progress and cost so promptly that neither can get out of quick control. The final report is a complete cost record giving for 39 listed items the final quantity, the actual labor cost, material cost and equipment cost, and the prorated overhead for each, and the total and unit costs of each item.

Construction has barely started on a few projects, and all details of equipment and methods are yet in a development stage.

FORM FOR DISTRICT ENGINEER'S REPORT OF SIDEWALK PROJECT VOLUME, EQUIPMENT AND COST ESTIMATE.

Item		Quantity	Unit	Cost
Earth excavation			Cu. yd.	
Ledge excavation			Cu. yd.	
Stone walls			Lin.-ft.	
Concrete walls	Bags of cement		Each	
	Gravel borrow		Cu. yd.	
	Sand borrow		Cu. yd.	
Gravel borrow			Cu. yd.	
Ordinary borrow			Cu. yd.	
Loam borrow			Cu. yd.	
Broken stone			Tons	
Bituminous material			Gals.	
Stone curbing—Type Va			Lin.-ft.	
Stone curbing—Type Vb			Lin.-ft.	
Stone curbing—Type Vc			Lin.-ft.	
Stone curbing—Type Vd			Lin.-ft.	
Sloped edgestone—Type A			Lin.-ft.	
Sloped edgestone—Type B			Lin.-ft.	
Sloped edgestone—Type C			Lin.-ft.	
Total curbing			Lin.-ft.	
Cable guard-rail R & R			Lin.-ft.	
New guard-rail			Lin.-ft.	
Catchbasins			Each	
Manholes			Each	
Plain conc. masonry			Cu. yd.	
——pipe			Lin.-ft.	
——pipe			Lin.-ft.	
——pipe			Lin.-ft.	
Bituminous concrete—Type E			Tons	
Property alterations			Dollars	
Stone dust			Tons	
Total Cost, Including Equipment and Labor				

Equipment

Type	No.	Rate per Hr.	Cost
—ton trucks			
—ton trucks			
—ton trucks			
Rollers			
Compressor			
Total			

Labor

Type	No.	Rate per Hr.	Cost
Skilled			
Semi-skilled			
Unskilled			
Total			

Dist. No. ____
Town ____
Highway Rt. No. ____
Auto Rt. No. ____
Project No. ____
Name of road ____
Date of report ____
Sta.—to Sta. ____
Length—Width ____

Remarks

____
District Highway Engineer

◆

Fatigue Tests Reported on Reinforced Concrete Beams

A REPORT by R. Saliger on investigations of reinforced-concrete beams in fatigue tests at frequencies ranging from 160 to 170 alternations per minute has been made to the Austrian Reinforced Concrete Committee. As reported in the "Building Science Abstracts" of the British Building Research Station, the beams used were reinforced with a German mild steel, yield point 41,250 lb.; German high-tensile steels, yield point 49,800 lb. and 62,600 lb.; and Isteg steel, yield point 51,210 lb. Maximum stresses recorded were about 55 per cent of the ultimate strength and about 10 to 30 per cent below stresses usually allowed in building construction. It was found that several million repetitions of loading, in which the steel stresses were as high as 60 per cent of the yield-point stress and above 30 per cent of the permissible stress, and in which compressive stresses in the concrete reached 2,135 lb. per sq.in., about double the permissible stress, did not cause fatigue in the concrete or any of the four steels tested. No change in the position of the neutral axis or in stress distribution and no marked cracking or deflection at failure were encountered under the repeated loading. The bond was unaffected, and there appeared to be no difference in the load-bearing capacity as compared with static loading. It was concluded that the permissible steel stresses in beams subjected to repeated loading may be taken as one-half the yield point. Also as the working stress of the concrete is approximately two-thirds of the static strength, the stresses in the concrete subjected to intermittent loads, ranging from a small initial value to a limiting maximum stress, should not be more than one-third of the minimum strength of good quality concrete.

New Activity in Construction

Upturn in volume of engineering construction is first definite response to large increase in new capital—Industrial building at a new pace is bright spot of private construction

LAST WEEK the volume of engineering construction contracts reached the highest total in four years, exceeding that of any week since October, 1931. The volume of $58,980,000 brings the average for four weeks of the current month to nearly $39,000,000, as against $27,000,000 for the year to date. This remarkable acceleration follows the development of new trends that have become well defined only recently, though noticeable since the early part of the year.

Simultaneous with the going into action of the big relief-works fund, but clearly independent of it, a marked revival of private construction is in progress. Industrial building is setting the pace, having increased sharply in early spring to nearly double its previous rate, but housing exhibits a like gain, though its totals are still at abnormally low level. The gain in private construction has wiped out the loss in public construction that resulted from procrastination in putting the works program into effect. It corresponds to a steady gain in private investment capital issues that began last year but has taken on a more decided character in 1935.

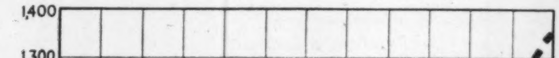


FIG. 1—INCREASE of private construction, masked during the summer by delay of the works program, is revealed in a sharp upturn in contract awards that began in September.

The upturn in the construction curve is the first wide break away from the trend followed since April, 1934. It is the more striking because up to a month ago the 1935 rate of contract letting barely kept pace with 1934. This fact resulted from the delay of the works program, and particularly from the failure to start highway work, which is one of the big items in spring and summer contract activity. The comparative record charted in Fig. 1 brings out this relation and shows clearly the upturn that began in September when release of the pent-up works program allotments supplemented the newly active private construction. The increase in private construction, shown in the lower curves of the chart, made up for the large loss in road work reflected in the record charted in Fig. 2. It is shown much more strikingly by the industrial building chart (Fig. 7, p. 614).

Looking at the course of events in construction during the last three years, more particularly with regard to the supply of funds, we find a picture as reflected in the chart Fig. 6. Here the open line represents construction volume, while the broken and full lines represent new capital for construction. The steady increase in supply of private capital for construction is apparent from the shaded areas under the curves at

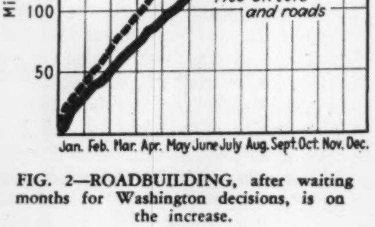


FIG. 2—ROADBUILDING, after waiting months for Washington decisions, is on the increase.

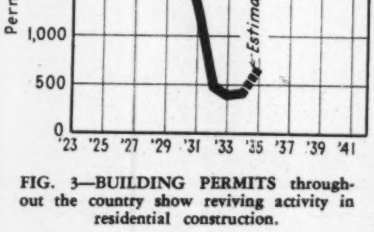


FIG. 3—BUILDING PERMITS throughout the country show reviving activity in residential construction.

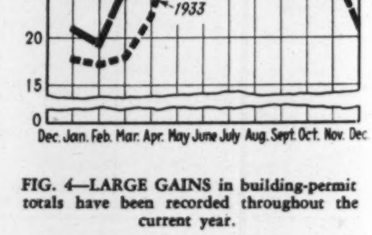


FIG. 4—LARGE GAINS in building-permit totals have been recorded throughout the current year.

the bottom of the chart, while the right-hand end of the chart gives a graphic picture of the great increase in available construction funds since June of this year.

The construction volume curve in Fig. 6 turned up in September, 1933, the rate increasing sharply from that indicated by the trend line A to trend B; it held this trend until April, 1934, when it dropped back slightly to trend C, following this rate until August of the present year. The upturn began in August and September, and a sharp further increase occurred in October; a new trend is in the making, though its rate cannot yet be gaged.

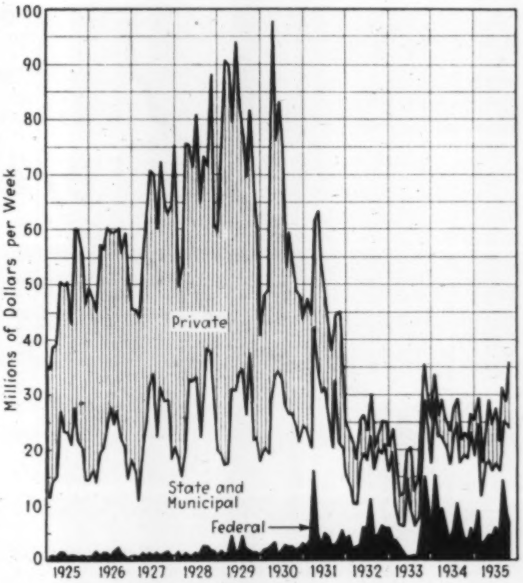


FIG. 5—A TEN-YEAR RECORD of engineering construction indicates that the prospects of improvement depend on resumption of industrial development. Residential building, not shown here, is normally about equal in volume to industrial (marked "Private" in the chart) and is at correspondingly low level today.

Supply of new capital

When these changes in construction activity are compared with the course of construction financing, it will be seen that each change follows, by about two months, an increase or decrease in the supply of new construction capital. Private investment financing — through state and municipal bonds and corporate security issues—reached its lowest point in 1933, though the RFC was releasing money slowly to a few self-liquidating projects until July. At this time the Public Works Administration began to make allotments, and the special highway fund became available to the state highway departments. These allotments caused a sharp rise in the new-capital curve, and, as the highway work went ahead promptly, the curve of construction volume rose two months later.

There was a longer lag between PWA approvals and contract awards. By the following February, however, most of the PWA money had been allotted, so that a sharp break in the curve of construction capital occurred here, and, again within two months' time, the construction rate slowed down. When the Hayden-Cartwright highway funds became available, in July, 1934, another sharp rise occurred in the new-capital curve, and as a result the established trend of construction activity continued well on into the current year.

If we turn to the relations of new capital and construction during 1935, we find that during the first five months more money was withdrawn by PWA in rescissions and reduction of allotments than was re-allotted for construction, with the result that net increases in new capial were less than the supply of private capital alone. And, although the work-relief act was passed in April, the first allotments were not actually made available until mid-summer, and not until October did Presidential approvals permit work on highways and grade-crossings to go forward. The stagnating effect on highway construction (Fig. 2), already mentioned, was one of the harmful effects of this state of affairs, for both normal and emergency highway undertakings were affected.

In the meantime private capital had been going into new construction investment at an increasing rate, marking a gain of almost one-third over the previous year. Construction activity was thereby maintained at the 1934 rate up to the time when the new PWA approvals began to come through in volume, beginning in August. At this point construction activity registered a new increase, and with the large October increment entered a definitely new course. The precipitous rise in the curve of available capital, seen at the right in Fig. 6, has begun to exert its effect.

Of course the funds of the Works Progress Administration, most of which go into construction, represent new construction capital, though of a special kind and of considerably reduced efficiency. To make allowance for this fact, the 1935 curve of new capital has been drawn to include 25 per cent of the WPA allotments for construction, so that the relation of financing to actual construction will be represented in proper proportion.

The overall picture indicates that with $1,600,000,000 available so far this year for non-federal construction, compared with $975,000,000 in the corresponding months of last year, or with $2,400,000,000 federal and non-federal new capital available compared with $1,160,000,000 a year ago (an increase of 104 per cent), it is a conservative prediction that the uptrend in construction volume will be substantially maintained.

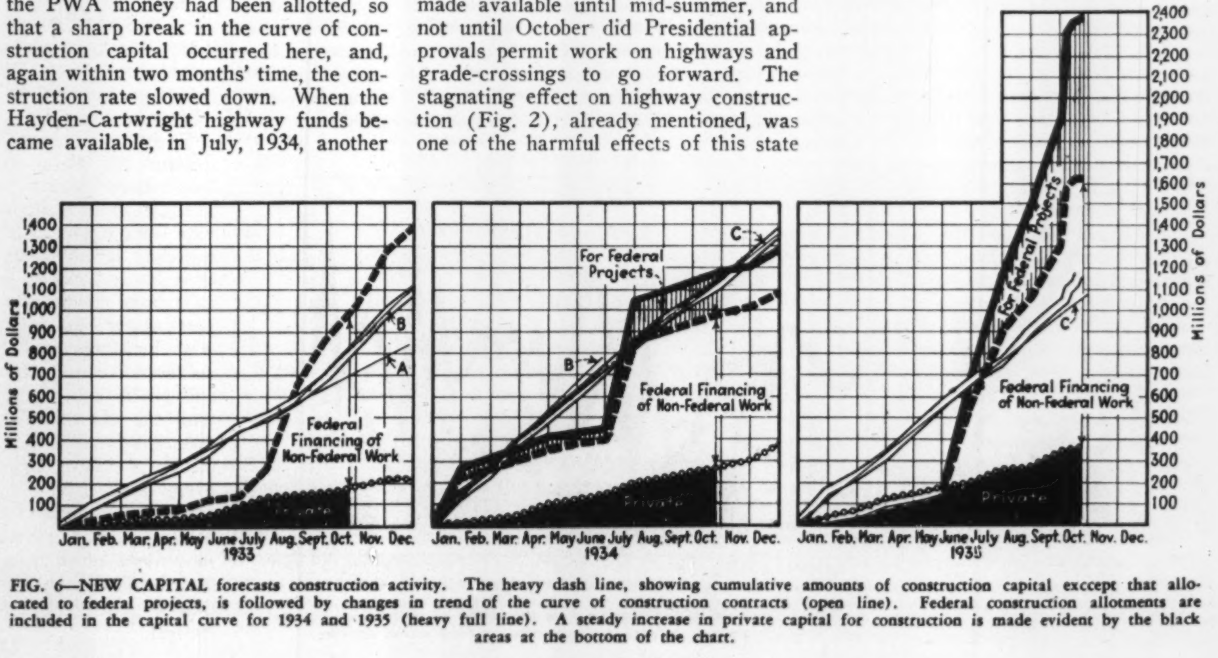


FIG. 6—NEW CAPITAL forecasts construction activity. The heavy dash line, showing cumulative amounts of construction capital exccept that allocated to federal projects, is followed by changes in trend of the curve of construction contracts (open line). Federal construction allotments are included in the capital curve for 1934 and 1935 (heavy full line). A steady increase in private capital for construction is made evident by the black areas at the bottom of the chart.

This is the immediate outlook. What is the relation of our present position with the past? How will the basic underlying factors affect our future?

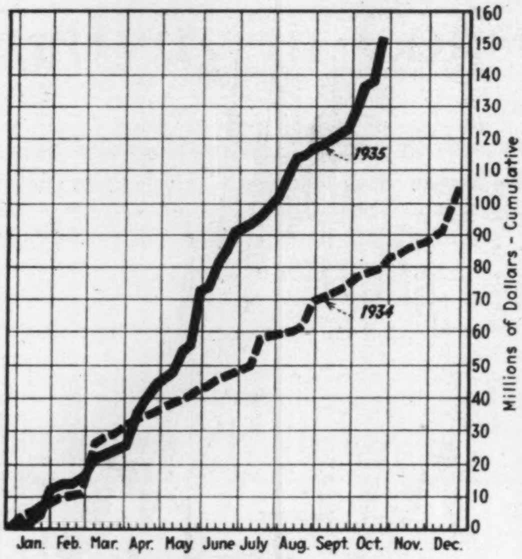


FIG. 7—**INDUSTRIAL BUILDING is far ahead of last year as the result of a spurt that began early in April.**

A new pace is set

In appraising the significance of the new construction activity it is important to keep in mind the general trend of construction. Over the ten-year period 1925-'35 its course is represented by the charted lines in Fig. 5, which records the value of engineering contracts reported by *Engineering News-Record.*

In normal years about half of engineering construction consists of public works, while the other half is private industrial and commercial construction. Residential building, not represented in Fig. 5, is normally about equal to industrial construction in volume. Thus, construction divides roughly into three equal parts: residential, other private construction and public works.

Since 1931, however, as the chart clearly indicates, private construction has been reduced to almost negligible volume; public-works construction, though also reduced, has dominated the field. Since further increase of public construction is unlikely, the controlling factor of further improvement is activity in private construction. It is this fact that gives significance to the increase of private construction during 1935—an increase sufficient to carry total construction volume 4 per cent above 1934 despite a loss of 5 per cent in public-works construction.

Private construction normally is about two-thirds the country's total construction activity. Its main component factors, therefore, need to be considered separately.

The first of these factors, residential building, is represented by the two charts Figs. 3 and 4. Looking at the former, it will be seen that housing dropped almost to the vanishing point from high activity in the late twenties to the low records of '32, '33 and '34, when barely 10 per cent remained. Beginnings of a revival were noticeable during 1934, however, and the current year shows a large gain. Still more decided gains may be looked for next year, according to present indications.

The great advance in 1935 over the two preceding years is made more apparent by the curves in Fig. 5. Even in the face of this advance, however, housing still remains a minor factor in the total construction picture.

The other major element of private construction is that which reflects directly the investment of savings in industry. In this class, industrial construction, we find a noteworthy development. Comparing the current year with the last (Fig. 7) it will be seen that a striking advance set in at the end of March, which is carrying construction in this field forward at almost double last year's rate. The new activity is due mainly to a broad forward movement in industrial-plant expansion, in which the metal and process industries are taking the lead. Automobiles and steel have contributed much to the increased rate of building, but food and chemical manufacture and indeed all types of industry are participating. While during the two years preceding certain special influences—a new demand for breweries in 1933, for distilleries in 1934—lifted industrial construction above the 1932 low, it was not until the revival of the present year that a definite and widespread movement in plant expansion and modernization came into action.

Meaning of revival

Special interest attaches to this revival because of the conditions that lie back of it. The funds required for this class of construction come from private savings, and the fact that they are being invested in new manufacturing plants testifies to the readiness of the individual who has saved his money to place it in productive investment rather than hold it in liquid condition. Again, the investment is made for future production rather than to supply this year's market requirements, which reflects confidence on the part of industry in a sustained market demand. In this light the current activity in industrial construction gives promise of a progressive return to normal industrial growth and construction.

These improved basic underlying factors—more money available and in turn the speeding up in the rate of construction activity—are also reflected in heavier shipments of construction materials. The monthly dollar volume of engineering construction awards, charted in Fig. 8, shows that cement shipments, fabricated structural-steel shipments, and the new index of construction materials shipments compiled by the Federal Employment Stabilization Office, all are moving forward in response to the trend of the construction curve.

The index of shipments of construction materials (base 1929 = 100) averaged 42 in 1933, moved up to 48 for 1934, and has averaged 52 for the first eight months of 1935. For August it has gone up to 69 (preliminary figure). The improvement in building construction is reflected in this index.

Thus more action is evident all along the line, more money is available, both from private and from public sources, a substantial increase is in progress in private construction, particularly in industrial buildings and in residential construction, and public construction with the aid of works program funds is holding its position. Moreover, the increase in construction activity is being followed by the movement of materials into the field. Construction is getting back on its feet.

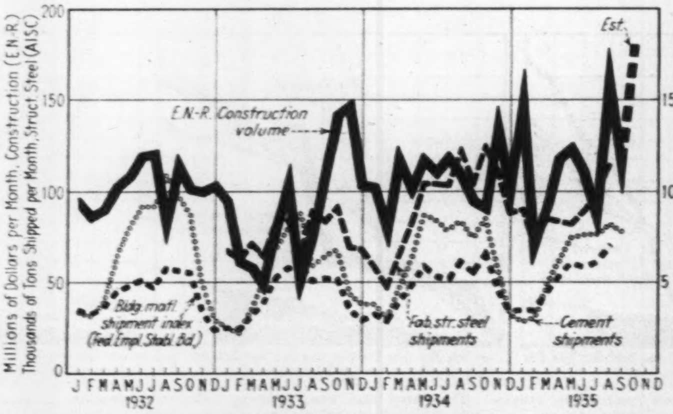


FIG. 8—**SHIPMENTS OF MATERIALS follow the course of construction volume. and now are trending upward with the rise in construction activity**

Book Reviews and Notes

A Monthly Commentary on Current Additions to the Civil Engineer's Library

Small Suspension Bridges

SUSPENSION BRIDGES OF SHORT SPAN—By F. H. Frankland. Cloth; 6x9 in.; pp. 128; diagrams, photographs. Published by American Institute of Steel Construction, New York, N. Y. $3.50.

THE SUSPENSION BRIDGE with a main span of 200 to 700 ft. does not receive the consideration by modern bridge engineers that its merits warrant, according to the author. Agreement with this conclusion is probably more general than many suspect, but the fact is that relatively few such bridges are built. If the reason lies in lack of knowledge of suspension-bridge design principles, this book should have a useful future. It frankly discusses the suitability of the small suspension bridge from the economic, esthetic and practicable points of view. It presents the design procedure, which is no more exacting than that being practiced by many engineers on continuous trusses, and it describes acceptable details for floors, stiffening girders, suspenders, cables, towers and anchorages. Erection methods are given a chapter, and a useful biblography is included.

Converting Rainfall into Runoff

SURFACE RUNOFF PHENOMENA: PART I—Analysis of the Hydrograph.—Publication 101, Horton Hydrological Laboratory, Voorheesville, N. Y. By Robert E. Horton. Paper: 6x9½ in.; 73 pp. lithoprinted. Published by Edwards Bros., Inc., Ann Arbor, Mich. Price 75 cents.

THE FOCAL POINT of hydrology is runoff phenomena, but one phase of the problem, the process of converting part of the rainfall into surface runoff, has never been clearly defined. Mr. Horton has developed a method for the complete analysis of surface runoff and discusses his theory by first presenting the striking illustration of a jagged, irregular rain intensity graph, resulting in a smoothly rounded runoff graph due to surface retention and channel storage. The author then goes on to show how this transformation takes place by following quantitatively, and in their natural order, those processes which nature follows in the conversion of a part of the rainfall into surface runoff; by reversing these processes it is also shown how the synthesis of the hydrograph may be brought about. An introduction to the monograph presents a synopsis of hydrological terms and their meanings and this is followed by chapters on infiltration capacity, surface detention and channel storage. The analysis of a hydrograph and the calculation of a direct surface runoff graph are discussed, and a simplified summary of procedure illustrates the method of application.

Chemistry of Cement

THE CHEMISTRY OF CEMENT AND CONCRETE—By F. M. Lea and C. H. Desch. Cloth; 6x9 in.; pp. 429. Photographs, diagrams, tables. Published by Edward Arnold & Co., London; and Longmans, Green & Co., New York, N. Y. $9.50.

Reviewed by P. H. Bates

Chief, Clay and Silicate Products Division,
National Bureau of Standards,
Washington, D. C.

THIS VOLUME discusses what the authors have indicated in the title—the chemistry of portland cement and concrete. As such it is but slightly concerned with the details of manufacture of this commodity, which invariably characterizes most publications on portland cement. The usual long chapters, well interspersed with cuts and reproductions of plant machinery, are properly lacking, and such space is given over to presenting data and results of world-wide studies on what happens in the process of making portland cement, what that commodity is, what happens when it is mixed with water and aggregates, what are the end products of their reaction, and what may happen in the presence of water containing aggressive salts.

However, while the chemistry of cement is the subject, the authors have borne in mind that this commodity is largely used by the engineer and hence have presented their material in a manner that should be easily grasped by all the members of that and other professions.

A brief history of the development of cement is first given, and it is interesting to note that the authors, though English, do not accord Joseph Aspdin with the invention of portland cement without some questioning. The early work in the studies of the nature of cement is reviewed, and very properly the preëminent position of LeChatelier is indicated. This portion of the volume then proceeds with a discussion of the later work in this field, particularly that at both the Geophysical Laboratory and the National Bureau of Standards in Washington. With respect to the latter, the reviewer, even though in charge of the cement studies at the National Bureau of Standards since their inception there, is inclined to believe that the authors have been a little too gracious in their appreciation of the value of the work done at the bureau. This portion of the volume then closes with the citation of the very late work done by one of the authors (Lea) at the Building Research Station in England, covering the extent of the tricalcium-silicate field in the lime-silica-alumnia-iron-oxide system, wherein he has also shown the possible extent of glass in portland cement. This is of particular value at this time in the United States, where cement is bought on the assumption that all of it exists as one or more of four crystallin compounds without any regard to the existence of glass. The chapters on setting and hardening and the action of acid and sulphate waters are below the high quality of the remainder of the book. This is not surprising, and the authors are hardly at fault. They are attempting only to present and interpret the results of the better original work done in any particular field. When, however, the results of such work as interpreted by the original authors become as controversial and contradictory as they are in these fields, it becomes a real Herculean task for any one to abstract such work and evaluate it adequately or convincingly.

The importance of hydraulic cements of the portland type naturally requires that the authors devote most of their attention to it. But of particular interest to the American engineer is the fact that there is a chapter on puzzolanic cements, another on portland blast-furnace slag cements, two chapters on high-alumina or fused cements, and a chapter devoted to such special cements as white, colored, masonry, non-staining, etc. Their citation of the long life of concrete structures composed of puzzolanic cements and blast-furnace slag cements should help to answer most positively the questions now too frequently asked in this country: Do such cements have any past history?

The chapters devoted to concrete aggregates, the resistance of concrete to natural deleterious agents, to the various organic and inorganic agents, and the examination of concrete failures are very adequate, though the engineer who may be expecting a dissertation on the design of concrete for usual purposes or in the presence of destructive agencies may be disappointed. But the authors are discussing the chemistry of such matters and have done so very well indeed.

Some may be disappointed after reading the volume in that some important questions regarding the nature, use and deportment of cements are not answered as conclusively or with an air of such finality as they would like. Indeed, at times there may be some seeming contradictions. It should be remembered, however, that much is yet to be learned regarding hydraulic cements, and the authors are presenting only what is known. Thus, when it is stated in the chapter on high-alumina cements that in the hydration of this particular cement the hydration products are either mono, di, or quarto hydrated calcium aluminates—while later it is indicated that the lowering of the strength due to high temperatures during hardening is due to a change of the crystallin form of the hydrated tricalcium aluminate (not before given as a hydration product)—one need not be nonplussed.

Altogether, this is the most valuable volume on the subject that is extant today. The publishers also are to be congratulated on the very excellent appearance and make-up of the volume.

Stadiums

STADI—By Giuseppe de Finetti. Cloth; 8⅜x11 in.; 180 pp.; photographs, drawings and diagrams. Published (in Italian) by Ulrico Hoepli, Milan, Italy. Price, 75 liras.

Reviewed by I. Gutmann

Associate Editor, Engineering Index, New York

FOR OBVIOUS REASONS stadiums are greatly favored by European dictators, and it is not without significance that the most comprehensive books on the subject have been published in Germany and in Italy, while in English we have only one recent work—M. W. Serby's "Treatise on the Design of Stadiums and Their Equipment," a mere 64-page pamphlet—this, in spite of greater resources and wider popularity of sports among the English-speaking nations.

De Finetti's book, Italy's latest contribution to the world's literature on stadiums, is principally an architectural study of examples, tendencies and projects. It traces the evolution of stadiums from ancient times down to the recent grandiose projects of Germany and Italy for the cities of Berlin, Rome and Milan. The projects for the huge stadium and Mussolini Forum of Milan, worked out by the author, are presented in considerable detail.

One of the eight chapters of the book is devoted entirely to a discussion of the work of Gavin Hadden, New York. Civil engineers may be pleased to learn that during the two milleniums surveyed, the one notable departure from the orthodox horseshoe and bowl designs was made by one of their own ranks. Mr. Hadden's design, which is probably termed "functional" in the language of architects, is based on an actual study of the voluntary distribution of a crowd of spectators actuated by the desire of obtaining the best available view of the spectacle. In a somewhat modified form this principle of design may be perceived in the plan of the stadium for Ankara, the capital of Turkey, composed by an Italian architect.

The book is not very technical from an engineering point of view. One misses formulas for visibility and other factors, structural details and cost data. The illumination problem is presented in a very general manner. The author excels in his chapter on the location of a stadium with reference to the general city plan.

Miscellaneous Notes on Booklets and Reprints

ROAD AND RIVER WORK carried on in China under the direction of the China International Famine Relief Commission are further reported in the 1934 annual report of the commission, Peiping, China.

RECOMMENDED STANDARDS for railroad and highway grade-crossing protection are included in Bulletin No. 2 (superseding Bulletin No. 1), Joint Committee on Grade-Crossing Protection, Association of American Railroads, Transportation Building, Washington, D. C.

LOW-COST ROAD IMPROVEMENT through stabilization with binder soil and calcium chloride, and the importance of crown on calcium-chloride stabilized roads are the subjects of Bulletins Nos. 22 and 23, Calcium Chloride Association, Penobscot Building, Detroit, Mich.

COMPARATIVE HEAT-LOSS TESTS on insulated and uninsulated buildings, made in connection with the construction of Mason City at Grand Coulee Dam, have been published as Engineering Bulletin 45, Engineering Experiment Station, State College of Washington, Pullman, Wash. The bulletin is entitled "Electric House Heating, Series No. 1."

RAINFALL INTENSITY-FREQUENCY DATA are given in Miscellaneous Publication No. 214, U. S. Department of Agriculture, Washington, D. C. (Price, 10c.) The paper is by David L. Yarnell. It contains the results of a compilation and analysis of rainfall data by the drainage division of the Bureau of Agricultural Engineering and was prepared to facilitate predicting with reasonable accuracy the period of recurrence of intense precipitation in any part of the United States.

GEOLOGIC STRUCTURE AND CONDITIONS and their relation to ground relief are set forth in a simple and informing way adapted to the understanding of the average educated man by the State Planning and Development Commission of New Hampshire in two recent monographs, one relating to the Franconia quadrangle and the other to the Littleton and Moosilauke quadrangles. Both pamphlets are published by the State Planning and Development Commission, Concord, N. H.

New Books and Revised Editions

[Those desiring copies of the books listed below or mentioned elsewhere in this section should order them from the publishers or from their local booksellers.]

THE BUILDING INDUSTRY AND BUSINESS CYCLES—By William H. Newman. Paper; 6x9 in.; pp. 73; tables, charts. Published by University of Chicago Press, Chicago, Ill. $1.

A COMPREHENSIVE TREATISE ON ENGINEERING GEOLOGY—By Cyril S. Fox, Calcutta. Cloth; 6x10 in.; pp. 392. Photographs, diagrams, tables. Published by The Technical Press, Ltd. London, and D. Van Nostrand Co., Inc., New York, N. Y. $7.50.

CREDIT MANUAL OF COMMERCIAL LAWS (1936)—Cloth; 6x9 in.; pp. 536; Published by National Association of Credit Men, New York, N. Y. $5. ***The chapter on "Bonds on Public Improvements" tells how the new federal law (amendment to the Heard Act) protects those who supply materials and equipment on public work.***

DESIGN OF CONCRETE STRUCTURES—by Urquhart and O'Rourke. Third Edition. Cloth; 6x9 in.; pp. 556; tables, diagrams. Published by McGraw-Hill Book Co., New York, N. Y. $4.50.

DEVELOPING AMERICA'S WATERWAYS—Administration of the Inland Waterways Corp. Vol. IV, Studies in Public Administration. By Marshall E. Dimock. Cloth; 6x9 in.; pp. 123. Published by University of Chicago Press, Chicago, Ill. $1.50.

INCOME AND ECONOMIC PROGRESS—Last of a series of four books on the "Distribution of Wealth and Income in Relation to Economic Progress." By Harold G. Moulton. Cloth; 5½x8 in.; pp. 191. Published by the Brookings Institution, Washington, D. C. $2.

NATIONAL PUBLIC WORKS—Addendum to Enquiry on National Public Works (*ENR*, April 25, 1935, p. 600) of the League of Nations. Published in this country by World Peace Foundation, 8 W. 40th St., New York. Price $2 . . . . ***Gives added information from countries not reporting in the original work as to the use of public works as a means of reducing unemployment and improving economic conditions. Additional information on the countries previously covered is included.***

THE PNEUMONOKONIOSES (Silicosis)—Literature and Laws of 1934. By George G. Davis, M.D., Ella M. Salmonsen, Joseph L. Earlywine. Cloth; 6x9 in.; pp. 490; Published by Chicago Medical Press, Chicago, Ill. $10.

PROCEDURE HANDBOOK OF ARC WELDING DESIGN AND PRACTICE—3d edition. Leather; 6x9 in.; pp. 595; tables, diagrams, photographs. Published by The Lincoln Electric Co., Cleveland, Ohio. $1.50.

PUBLIC WORKS IN PROSPERITY AND DEPRESSION—By Arthur D. Gayer. Cloth; 6x9 in.; pp. 445; 100 tables, 3 charts. Published by National Bureau of Economic Research, New York, N. Y. $3.

SPECIFICATION DOCUMENTS for Building Materials and Construction—Classified and arranged by David H. Merrill and Theodore C. Combs. 6x9 in.; pp. 522; tables, photographs. Published under direction of Pacific Coast Building Officials Conference, Los Angeles, Calif. Cloth, $5; fabrikoid, $7.50.

STANDARDS OF LIVING IN THE CLEVELAND METROPOLITAN DISTRICT As Depicted by the Federal Real Property Inventory—Special 1935 Report. —By Howard Whipple Green. 9x12 in.; 695 pp.; chiefly tables and maps. Published by the Real Property Inventory of Metropolitan Cleveland, Ohio. Price $100.

STEEL DAMS—By Otis E. Hovey. Cloth; 6x9 in.; pp. 122; diagrams, photographs, formulas. Published by American Institute of Steel Construction, New York, N. Y. $2.50 plus postage.

Letters to the Editor

Concrete Shell Domes

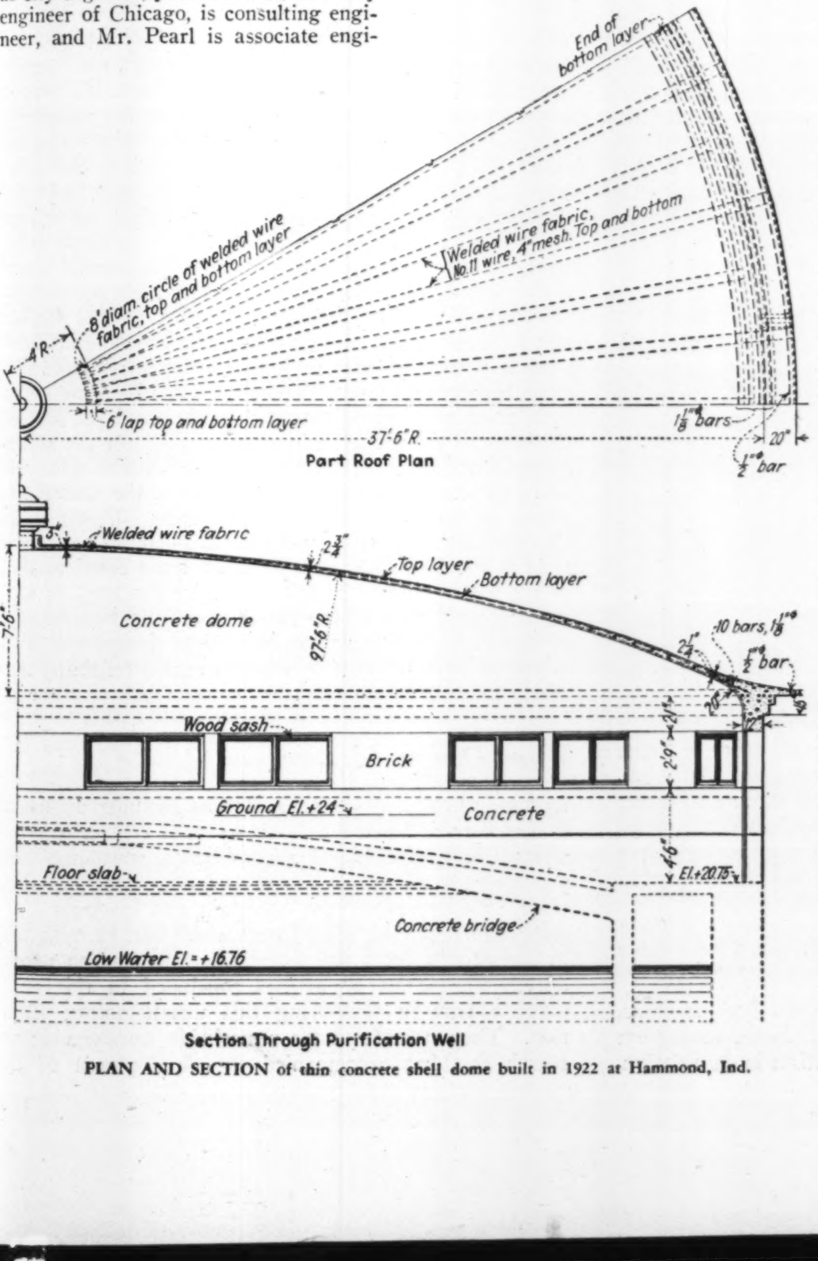
Sir—Prompted by your article, "Thin Concrete Shell Dome for the Hayden Planetarium," July 25, 1935, p. 105, I would like to call your attention to a spherical concrete shell roof constructed more than a decade ago as part of a reservoir for the Hammond, Ind., waterworks. This structure would indicate that American designers are not so timid or so far behind the Europeans in this respect as might be assumed from your editorial in the same issue.

As will be noted, this roof is a segment of a 195-ft.-diameter sphere and is only 3 in. thick at the center. The thickness of concrete required by the stresses was only about 1½ in., but to protect the reinforcing from corrosion this was increased to 3 in.

[On the original drawing of this interesting structure, W. F. Bridge is listed as city engineer, John Ericson, later city engineer of Chicago, is consulting engineer, and Mr. Pearl is associate engineer. The roof was built by the Henry W. Horst Co.—Editor.]

J. W. PEARL,
Consulting Engineer.

Chicago, Ill.,
Aug. 1, 1935.



PLAN AND SECTION of thin concrete shell dome built in 1922 at Hammond, Ind.

Extraordinary Margin of Safety

Sir—The engineering profession is indebted to C. B. McCullough for his tests reported in your issue of Sept. 19, p. 406.

The fact that the flexural compressive strength of concrete is wholly different from its 28-day standard cylinder compressive strength is not here discovered for the first time. But how completely the flexural potentialities of concrete have been ignored in standard specifications is strikingly shown in Fig. 4, which contrasts breaking loads with loads allowed under various familiar maximum f_c values. The article refers to the "rather extraordinary" margin of safety indicated. Indeed it is rather extraordinary—and then some. It is because the author has brought the subject out of its obscurity and clearly into the focus of engineering attention that the above-referred-to indebtedness to Mr. McCullough is due.

The curve "actual breaking load" in Fig. 4 gives the average value obtained with the four types of beams. Inasmuch as it combines the lower loads of the diagonal tension failures of type 1 and 2 beams with the higher loads obtained in the strictly compressive flexural failures of type 3 and 4 beams, even it does not present the full disparity between actual and allowed.

It is interesting to compute in the cases of those specimens that failed by compression in the concrete the loads whose application would be permitted upon them under that tried old value for bridges, 650 lb. per sq.in., and to contrast them with the breaking loads. They are as follows:

Type	Percentage	Permitted Load (Lb.)	Capacity Load (Lb.)
3	0.0373	9,090	118,800
4	0.0373	8,990	111,375
3	0.0460	9,680	133,650
4	0.0460	9,580	115,830

Here are factors of safety ranging from 12.4 to 13.8! Dire and dreadful as apprehensions over using concrete may be, they scarcely warrant factors of safety like these.

In *The Structural Engineer* (London), March, 1934, Fritz von Emperger and his associate Mr. Kauf are quoted as stating that with ordinary percentages of reinforcement there is no use in even computing the concrete flexural stress, much less in having any limiting maximum value for it. Oscar Faber is quoted as saying that present values in flexure are "ridiculously too low." Mr. McCullough's article and tests likewise say something, politely yet pungently.

HOMER M. HADLEY,
Regional Structural Engineer,
Portland Cement Association.

Los Angeles, Calif.,
Sept. 25, 1935.

Heavy Trusses in Buildings

Sir—The article on the Kansas City auditorium (*ENR*, Sept. 26, p. 422) refers to the use of large trusses in buildings, but the heading "Roof Trusses" might lead the reader to infer that all those mentioned are roof trusses. In the Stevens Hotel, Chicago, the 85-ft. trusses have their bottom chords at the fifth floor and carry a superstructure of 22 stories over a ballroom on the second floor (*ENR*, April 22, 1926, p. 638). This accounts for the great weight of 240 tons for the relatively small span as compared with the same weight for the 226-ft. roof trusses of the Kansas City auditorium.

E. E. R. TRATMAN.

Wheaton, Ill.,
Oct. 4, 1935.

ENGINEERING NEWS-RECORD

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Editorial and Publishing Offices at 330 West 42d Street, New York.

October 31, 1935

For a Real Census

LET US MAKE SURE that the construction census about to be taken by the Department of Commerce will produce a true record of construction activities. In the very excellent first count, made by the Bureau of Census in 1930, consideration was given only to contract construction; all of the great volume of work done with their own construction forces by governmental agencies, the railroads, public service and large manufacturing corporations, received neither analysis nor summation. This is an omission that should be avoided in the new census, for the previous survey showed that figures on contract work alone give so incomplete a picture of the construction situation as to deprive the result of the greater part of its potential value. The true value of a census to the construction industry and to general business, which is so largely influenced by construction, lies not only in complete coverage of the construction field but also in the analysis of the basic items that make up construction—employment, wages, materials, equipment and markets. Maintenance construction must also be included, for this class of work involves much employment and extensive use of materials. If the new census of construction is worth taking at all, it should represent a complete coverage of construction—the first in history.

A Story from Life

MAIN STREET was in deplorable condition; the old stone pavement badly needed surfacing, the city engineer knew. At the same time the Works Progress Administration needed work for unemployed men, and the city engineer was called upon to provide it. The occasion seemed ideal to combine two purposes—but there were rules! Only so many dollars per man-year of relief-roll employment could be spent, and this amount would not pay for the surfacing material, tools, spreaders and rollers to apply it. In this difficulty an ingenious thought came to the city engineer; making use of it, he was able to set up his project to fit the limiting rule, the WPA's approval came through, and he finished the job. What he did was that instead of putting the surfacing directly on the old pavement, he had the stone taken up, piled along the curb, carried over to the other side of the street and relaid, a set of operations that called for a sizable force of men; then the bituminous surfacing was brought to the job, spread and rolled. Because of the large amount of direct employment provided through the expedient of taking up the stone, the material cost was diluted; men enough were employed to fit the WPA rule. *Question:* was this good engineering, and is it sound public policy?

Lessons in Conservatism

THE FAILURE of the smaller of the two Zerbino dams, at Molare, described elsewhere in this issue, cannot but have the effect of increasing conservatism in dam design. Contrary to what might be expected, it was the smaller dam that failed, though its 40-ft. height made it a minor structure, compared with its 140-ft. companion. The relative overload due to 8-ft. head on the crest in an abnormal flood evidently represented a greater relative overtax on the smaller dam. An important teaching of the case is the ever-present risk of underestimating extreme flood probabilities, especially in mountainous country. The storm that destroyed the dam was exceptionally severe, yet not beyond what has occurred in comparable drainage areas; how far it exceeded the spillway provision made by the designers is revealed by the data given in Dr. Probst's article. Another teaching lies in the oft-repeated experience of heavy erosion of weak foundation rock. In view of the peculiar topography of the site, where the rock sloped away from the dam both upstream and down, foundation solidity was far more vital than usual, and, as hindsight suggests, its weakness had not received adequate thought. In brief, both as to discharge and overload capacity and as to foundation security, it becomes evident that minor dams may demand a higher factor of safety than their size alone would suggest—a principle never before so strongly emphasized as by the Molare failure.

Improvement Recognized

WHEN A STRONGER GRADE OF STEEL was adopted as standard material for bridge and structural work two or three years ago, the groundwork was laid for increased working stresses. The recent decision of the American Institute of Steel Construction to base its future manual tables on a 20,000-lb. basic working tension therefore invites general approval. Since thorough study had been given the matter by a competent technical committee headed by F. T. Llewellyn, the step is in no sense to be regarded as hastily considered. In fact, some sixty towns and cities and at least two state highway departments have already permitted the use of the higher stress. It is to be kept in mind that the 60-72,000-lb. steel in connection with its higher ultimate strength also has a higher yield point. Though the specified minimum yield point of the medium-steed grade stands at 33,000, the same as the revised minimum adopted for the softer grade some years ago, rolling-mill procedure will naturally produce a higher yield point when the strength is raised by increasing the carbon content. Under these circumstances the safety margin obtained with medium steel at the 20,000-lb. stress will be quite equal to that of the softer steel at 18,000; and since the level of fabricating practice has been raised greatly in two decades of progress any comparison of modern design with that of earlier days is bound to show increased reliability and safety as well as economy.

Wind-Design Advance

IN THE TWENTY YEARS since Robins Fleming published in *Engineering News* his classic series of articles on wind stresses and windbracing requirements, substantial improvement in wind analysis and design methods has taken place. Unfortunately the uncertain and inadequate assumptions regarding wind forces which Mr. Fleming had to accept still form the foundation for modern procedure. The series of articles concluded in this issue plays a part in remedying this unsatisfactory situation. They stem from the remarkable aerodynamic research that has accompanied the development of the airplane and its principal laboratory, the wind tunnel. From the data made available, some evaluation of pressure-velocity relations is possible that takes the shape of the building or bridge into consideration. The magnitude and location of suction forces are made relatively tangible. The effect of gusts and eddies is included in formulas on a tentative although well-founded assumption. Velocity variation with height is taken into account. All these are definite advances over the blind and universal use of a pressure-velocity formula that represented the results of tests on a flat plate only and the assumption that wind exerts a steady, positive pressure. In the light of future developments some of the recommendations may have to be revised. For the present, however, they challenge and merit attention. In presenting them, the author, W. Watters Pagon, performs the same service for the profession today that Mr. Fleming performed two decades ago.

Road Sidewalks

CRITICISM of highway engineers for failure to provide sidewalks along main roads has been common. In general it is unjust. Most states have had old laws prohibiting state expense for sidewalks, and only within five years have a few states modified these laws. New Jersey in 1930, Massachusetts in 1931 and subsequently a few other states enacted permissive legislation. This legislation, however, has not been put in force by money appropriations until this year, when Massachusetts, as is described elsewhere in this issue, took definite action to finance sidewalk construction on a large scale. This exceptional decision opens up again by its importance the question of the sidewalk as a considered part of the road structure.

Since the early days of common law the pedestrian has had the same legal and proper rights on public roads as has the wheeled vehicle, and all this long time he has been preserving his life in road travel by dodging quickly enough to keep from being run over. Today, unfortunately, vehicles travel too fast to be easily dodged even by expert jumpers. Last year about 16,000 of these walkers were not sufficiently alert and quick on their feet to avoid collision, and they were killed. Not all of these people were killed because they had no other place than the road on which to walk; most of them met death in cities and towns that had sidewalks, but one in six where there was only the roadway for travel. For example, some 2,600 killed on rural roads had only the road on which to walk. Considering merely saving of life, the accident frequency justifies separate walkways.

But the problem before the highway official is not so simple as this. His problem is to develop a system of roads that will give the utmost of transportation service, and such service is provided only when trunk roads, their feeder system of secondary roads, and finally the land-service roads that feed the secondary system are improved each in proportion to the economic and social importance of its traffic service. No refinement of improvement of one of these classes of roads may properly deny all improvement to another class that its users need for communication by travel. The fact that main-road sidewalk construction would require precisely such a denial of rights of highway service has been the reason why road engineers have not urged it. The construction of a mile of sidewalk such as Massachusetts is building would mean in most states that a mile or two of secondary or tertiary road must forego improvement.

There is justification for road sidewalks on some roads in certain places, but whether their construction as a general main-road policy can be justified is far from clear in the present stage of partial improvement of highway mileage. Greater service to traffic and even to safety of travel lies in widening, straightening and surfacing secondary and land-service roads, at costs no greater than that of main-road sidewalks. And on our main roads many more lives can be saved by doing away with blind side-road entrances, slippery surfaces, sharp curves, soft shoulders and a dozen other road hazards familiar to every car driver.

From Re-investment to Recovery

ONE of the great results of the depression is that people generally have come to appreciate the extent to which the operations of industry and trade, main gears of our economic machine, are dependent on construction. Until 1929 it was held that construction was only a byproduct, and accepted doctrine taught that consumer buying and consumer money circulation, as revealed in retail trade statistics, are the index of business health. But when construction went down catastrophically it became clear that the flow of savings into permanent investment through the heavy industries plays a controlling part in the national economy.

Since that time the bearing of construction activity on employment and business vitality has been better understood, and through this knowledge it has been recognized that the continuing low level of construction is a prime obstacle to recovery. Housing in normal times uses the productive labor of two to three million workers; today all but a few of these are still out of work, and many are on the relief roll. Industrial building and rebuilding normally occupy a similar army, and most of these too are without work. Before there can be recovery, these men must get back to their jobs, some of them at the building site, others in lumber mill, in structural shop, or other service of supplies. They can do so only if men generally have faith in the future, are willing to invest their savings as capital rather than hold them in liquid funds, and so call upon construction.

It is these relations that give life to the formal picture of current construction statistics presented on another page of this issue. It expresses in graphic form the sharp revival of both housebuilding and industrial-plant construction that is going on and that constitutes the most significant development of the year. It will probably take some time before the new spirit made apparent in this revival is fully expressed in employment, in distributed production and in commercial dealings, but the leaven of new enterprise is working.

Unquestionably a period of strong activity in housebuilding is ahead, to supply the shortage that is everywhere conceded to exist. Because of the still-unsolved housebuilding credit problem involved in obsolete mortgage practice, however, it may be delayed. The industrial revival, on the other hand, holds promise of early progress. Back of it is not only increasing business demand but a confidence that this demand will be maintained, that the wants of men require to be supplied by new and better productive facilities. It is the characteristic expression of those impulses and trends of growth which spell recovery.

CURRENT NEWS

Highway Planning Benefits Stressed At Safety Congress

INCREASING numbers of highway accidents and methods of decreasing their frequency formed the themes of many of the discussions of the 24th annual Safety Congress in Louisville, Ky., Oct. 14-18. President Roosevelt, in a letter read to the congress on the opening day, pointed out that progress has been made in reducing industrial accidents but that highway accidents remain so high that federal agencies as well as state agencies may have to assume control of the safety problem.

R. A. Moyer, associate professor of highway engineering, Iowa State College, discussed the findings of a four-year study of automobile skidding. It was explained that in order to make speeds of 80 m.p.h. safe for even a selected group of drivers would require smooth road surfaces, curves with spiral transition approaches and roadways on which all passing and crossing hazards are eliminated. No roads exist in this country at the present time of any considerable length which could meet these specifications and until such roads are constructed, driving at top speed of cars as they are now produced is highly dangerous. Professor Moyer stated that engineers in all lines of work build structures with a factor of safety consistent with the risk of failure involved, but that in highway safety work engineers are prone to determine safe driving speeds without any regard for the factor of safety. Present experience in accidents indicates that driving cars with little or no factor of safety leads to unfortunate results and the traffic engineer should help to increase the factor of safety by eliminating hazardous surfaces and by standardizing speeds according to zones.

Construction accidents

During the session of the construction section it was pointed out that more than 25 per cent of all compensable injuries are chargeable to handling materials. In the opinion of P. F. Stricker, safety engineer, U. S. Department of Labor, reasonable regulation and enforcement of safety standards by the state is necessary to prevent accidents in industry. Mr. Stricker stated further that absence of a broad program of prevention throughout the construction industry indicates that reasonable and intelligent control by the state is essential. Propaganda, instruction and education generally are not sufficient to train people to become safe workers.

Officers elected

Officers for the next year of the National Safety Council are: Dr. C. H. Watson, medical director, American Telephone & Telegraph Co., president; Harold G. Hoffman, Governor of New Jersey, vice president for public safety; John B. Gibson, Western Electric Co., vice president for safety councils; A. S. Regula, Industrial Relations Counselors, vice president for engineering; A. V. Rohweder, superintendent of safety and welfare, Duluth, Missabe and Northern Ry. Co., vice president for industrial safety. Thomas H. MacDonald, chief, Bureau of Public Roads, U. S. Department of Agriculture, and E. J. Mehren, president, Portland Cement Association, were among those chosen for positions on the executive committee, William C. Knoelk, chairman, Milwaukee Safety Commission, Milwaukee, Wis., was made sectional representative for the street and highway traffic section.

Water District Asks Bids On Colorado Aqueduct Plants

The Metropolitan Water District of Southern California has called for bids for the construction of two of the five pumping plants to be erected on the main line of the Colorado River Aqueduct. Bids will be opened at the district office at Los Angeles, Calif., Nov. 19.

The two plants are the Intake plant on the Colorado River, about 1½ mi. above the Parker Dam, and the Gene plant at Gene Wash reservoir, about 2 mi. south of the Intake plant and 2 mi. west of the Colorado River.

Bids for furnishing the pumps for the remaining pumping stations have been asked by the district and will be opened Dec. 3 at Los Angeles.

In addition to the Intake and Gene plants, the district plans the construction of the Iron Mountain plant, at the east portal of the Iron Mountain tunnel, 60 mi. from the intake; the Eagle Mountain plant, 110 mi. from the intake, and the Hayfield plant. The latter station, at 1,807 ft. above sea level, is the highest plant on the line.

The Intake plant will consist of a pump house, control house, transformer house, switch house, incline railway, delivery pipe and surge chamber, all included in one general contract. The Gene plant will be similar to the Intake plant with certain variations due to location and conditions of operation.

Other units to be added

Each of the five plants ultimately will contain nine pumping units of about 200 sec.ft. capacity each. As portions of the aqueduct are now being constructed for only half capacity, and all of the latter will not be utilized at the outset, three units will be installed initially and other units added as the demand for water increases.

Manufacturers submitting bids for pumps will be required to provide the California Institute of Technology with a model pump for testing purposes.

Army Engineers Get Passamaquoddy Data Under Agreement

TERMS of an agreement between the War Department and Dexter P. Cooper have been announced by which the government obtains all rights, franchises, plans, data and equipment pertaining to the Passamaquoddy hydro-electric tidal development belonging to Mr. Cooper and to Dexter P. Cooper, Inc. In return, Mr. Cooper and the corporation will be paid $60,000.

It is further agreed that Mr. Cooper will furnish, without further consideration, consulting assistance and advice during the planning and construction of the project, and thereafter until it is in complete and satisfactory operation.

A report that the Corps of Engineers had been ordered not to award any contracts at Passamaquoddy until the Maine legislature should create a power authority to operate the plant after completion was denied at the office of the Chief of Engineers. Contracts for borings, buildings and other preliminary work are still being let, it was stated. No major construction contract will be ready for award until next year.

It is now expected that certain of the projects now being built with relief works funds by the Corps of Engineers will probably be turned over on completion to local governmental bodies for operation and maintenance. This applies to works not concerned primarily with navigation. The only large project which would fall under this rule is the Passamaquoddy work, but there are a number of small jobs affected, chiefly flood control works. No list of the projects in this classification has been made, nor has any official action been taken looking toward such transfer.

Project allotments reduced

The Passamaquoddy hydro-electric project is also among those projects for which funds were reduced on Oct. 24. At that time reductions totalling $16,000,000 were made in relief works funds previously allocated to thirteen projects under the direction of the Corps of Engineers. The list, with the amount of reduction, is as follows:

Allegheny River	$170,000
Caloosahatchee River and Lake Okeechobee	500,000
Chesapeake and Delaware Canal	250,000
Kanawha River	462,000
Mississippi River, Missouri River to Minneapolis	2,000,000
Missouri River, Kansas City to Sioux City	500,000
Passamaquoddy	5,000,000
Illinois River	500,000
Shrewsbury River	393,000
East Chester Creek	100,000
Conchas Dam	2,000,000
Los Angeles Flood Control	4,000,000
Black Bayou	125,000

The reductions in allotments are explained as returns to the general relief pool of funds which could not be expended before July 1, 1936, the end of the present fiscal year, implying that they will be restored after that date.

Bids Asked on Reclamation Work Seminoe Dam Readvertised

Three major units of the All-American Canal and two major units of the Casper-Alcova project, Wyoming, have been advertised for bids by the U. S. Reclamation Bureau. Seminoe Dam and power plant on the North Platte River, Casper-Alcova project, has been readvertised and bids are to be opened at Casper on Nov. 26. The Seminoe Dam and power plant are being readvertised as a result of the rejection by the low bidder of the contract offered subsequent to an earlier advertisement. The award of the contract was made on Aug. 29, 1935, to Winston Bros. Co., Minneapolis, Minn., in combination with Utah Construction Co., Bechtel Co., Morrison-Knudsen Co., and Henry J. Kaiser Co. on a low bid of $2,194,007 (*ENR*, Sept. 26, 1935, p. 452).

Bids will be opened at Casper, Nov. 25, on tunnels No. 3, 4, 5, and 6 of the Casper-Alcova project. These tunnels are from 13 to 36 mi. southwest of Casper and will require 81,500 cu.yd. of tunnel excavation and 166,000 cu.yd. of open cut and the placement of 17,750 cu.yd. of concrete lining.

Bids for construction items on the Imperial Dam and desilting works at the head of the All-American Canal on the Colorado River will be opened at Yuma, Ariz., Nov. 21. Contract has been awarded for the 72 rotary scraper equipments to the Dorr Co., Inc., New York City, and the Dravo Contracting Co., Pittsburgh, was the low bidder on the roller gates.

A section of the All-American Canal connecting the Imperial Dam with the already completed section of the canal opposite Laguna Dam, about 5 mi. long, has been advertised and bids will be opened in Yuma on Nov. 23. This section will involve 1,027,000 cu.yd. of common excavation and 542,000 cu.yd. of rock excavation; placing of 691,000 cu.yd. of compacted embankment and 8,000,000 cu.yd. of hauling and placing rock fill on the outside slope of the canal bank.

Four large siphons on the All-American Canal also have been advertised, bids to be opened Nov. 25, at Yuma. These siphons will carry washes No. 120 and 424 and Unnamed and Picacho washes across the canal. They are located about 10 to 13 mi. northwest of Yuma on the California side of the Colorado River. This work will involve about 370,000 cu.yd. of excavation, placement of about 32,380 cu.yd. of concrete and 14,000 cu.yd. of riprap and 6,482,000 lb. of reinforcing bars.

The Imperial Dam and desilting work will involve, among other large items, 552,000 cu.yd. of excavation for the dam, 79,000 cu.yd. of excavation for the desilting works, driving 5,203,000 lb. of steel sheet piling, installation of machinery and equipment in the control works, 10,000 cu.yd. of concrete piling, 65,200 cu.yd. of concrete in the dam, 55,100 cu.yd. of concrete in the aprons and 34,700 cu.yd. of concrete in the desilting works.

Unity Dam on Burnt River in Oregon will be advertised for bids shortly. Notice has been given in order that prospective bidders might inspect the site in advance. Bids will be opened at Vale, Ore., and are expected to be called before Dec. 1. This is a comparatively small earthfill structure and no specifications have as yet been issued by the Reclamation Bureau.

Works Program Allotments Increased As Project Approvals Are Speeded

(Washington Correspondence)

Officials, concerned in the carrying out of the works program, are now bending every effort to get the program in full swing before Congress reconvenes in January.

Works program allotments through Oct. 16 totaled $3,696,627,415, leaving a balance of $866,782,582 at President Roosevelt's disposal out of a total of $4,563,410,000 that was subject to his control under the $4,880,000,000 appropriation by Congress last April. Allotments for actual work projects undertaken by PWA, WPA and various federal departments and agencies total $2,529,094,881. The rest has gone principally for continuing direct relief and rural rehabilitation, also a tidy sum of $95,327,534 for administrative expenses as the works program has dragged along from spring through summer and into winter.

For WPA state programs, the President allotted $1,028,635,612 through Oct. 26. Comptroller General McCarl has countersigned Treasury warrants actually releasing $994,753,516.

In many states, the WPA allotments are running over quotas originally established for such work but in no case has total allotments, which include PWA and federal projects as well as WPA, yet reached the share of the $4,000,000,000 to which a state is entitled on the basis of the number of employables on its relief rolls.

PWA is taking no chances on losing any of its comparatively modest share of the works program. Contracts representing 45 per cent grants totaling $331,349,589 from relief works funds and loans of $168,717,309 from PWA's revolving fund have been forwarded for acceptance to the sponsors of 3,986 projects. Those who do not accept PWA's offer or fail to award construction contracts within a reasonable time will lose their allotments. Funds thus released will be allotted to other projects selected from a waiting list of 6,000 which PWA has on file.

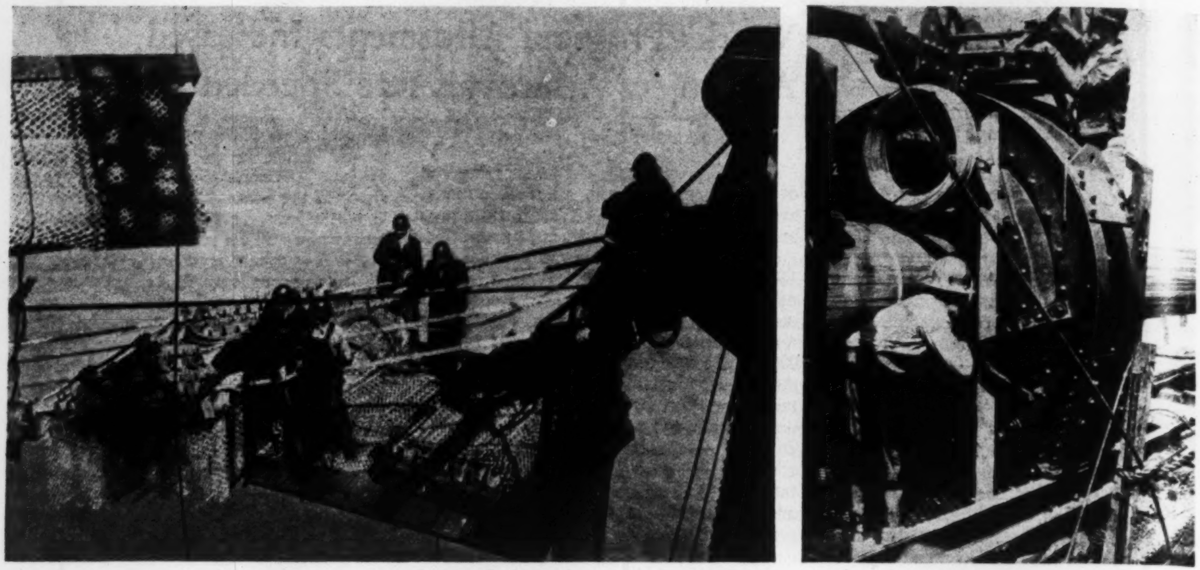
Purchases of materials and supplies for the works program will soon begin to swell. The first fragmentary total of $10,700,000 is not significant as WPA projects on which work has started are small in volume. The projects of federal departments and agencies likewise have lagged, mostly because of the bottleneck in the General Accounting Office.

PRESIDENTIAL ALLOTMENTS FOR THE WORKS PROGRAM
(As of October 16, 1935)

Agency		Total Allotments	Allotted for Works Projects	Administrative Allotments	*Allotted for Other Purposes
Total Appropriation Emergency Relief Act, 1935		$4,880,000,000			
Deductions prior to passage of Act:					
FERA	$292,000,000				
Farm credit administrative	60,000,000				
All others	9,590,000				
Total deductions	$361,590,000				
Less charges to other appropriations	45,000,000				
		316,590,000			
Available for Presidential allotments		4,563,410,000			
FERA (direct relief)		817,000,000	....	5,000,000	812,000,000
Federal Employees Compensation Commission		28,000,000	....	....	28,000,000
Revolving fund for purchase of materials and supplies		3,000,000	....	....	3,000,000
Advisory Committee on Allotments		25,000	....	25,000	....
Department of Agriculture:					
Public Roads		500,000,000	391,000,000	9,000,000	100,000,000
Other Bureaus		73,969,423	53,431,923	8,537,500	12,000,000
Civil Service Commission		325,000	....	325,000	....
Department of Commerce		10,350,944	10,150,944	200,000	....
Emergency Conservation Work (CCC)		523,479,450	522,084,000†	690,450	705,000
General Accounting Office		6,000,000	....	6,000,000	....
Department of Interior:					
Puerto Rico Reconstruction Administration		37,112,920	35,887,920	1,225,000	....
Reclamation Service		81,150,000	79,650,000	1,500,000	....
Other Bureaus		701,000	701,000	....	....
Department of Justice		500,000	....	500,000	....
Department of Labor		9,334,605	1,079,995	8,254,610	....
Library of Congress		211,500	211,500	....	....
National Emergency Council		1,150,000	....	1,150,000	....
National Resources Committee		1,000,000	....	1,000,000	....
Navy Department:					
Bureau of Yards & Docks		17,579,625	17,370,470	209,155	....
Prison Industries Reorganization Administration		100,000	....	100,000	....
Public Works Administration:					
Housing		42,949,250	42,949,250	....	....
Non-federal projects		138,969,703	138,969,703	....	....
Resettlement Administration		167,150,000	38,000,000	12,650,000	116,500,000
Rural Electrification Administration		6,674,767	6,224,767	450,000	....
Treasury Department		28,270,705	15,570,705	12,700,000	....
Veterans Administration		1,269,120	1,234,120	35,000	....
War Department:					
Corps of Engineers		145,716,169	144,716,169	1,000,000	....
Quartermaster Corps		15,079,147	14,947,766	131,381	....
General		144,438	....	144,438	....
Works Progress Administration:					
National Youth Administration		27,056,268	27,056,268	....	....
State Work Programs		1,012,358,381	987,858,381	24,500,000	....
Total Allotted through Oct. 16		$3,696,627,415	$2,529,094,881	$95,327,534	$1,072,205,000
Balance Remaining for Allotment		866,782,585	....	....	....

*Includes allotments for direct relief, rural rehabilitation and relief, land purchase, revolving fund for purchase of materials and supplies, employees compensation fund, and statutory allotment for public roads in fiscal year ended June 30, 1935.

†Includes $102,084,000 allotted in fiscal year ended June 30, 1935.



CABLE SPINNING COMPLETE ON ONE BAY BRIDGE UNIT

Spinning was completed early this month on both cables of the San Francisco-Oakland Bay Bridge between the west anchorage and the center anchorage and squeezing the 17,464 wires of each cable into circular section now is under way.

The cables were spun from a new type of catwalk made of wire mesh flooring on timber cross beams hung from four 2¼-in. dia. wire ropes. Light in weight and easy to erect (see view above), the footwalks furnish a minimum of wind resistance and a sure footing for the workmen. Photos show starting of preparations and squeezing operations.

Squeezing of the 20⅝-in. cables is being done by six radial rachet jacks driven by compressed air motors mounted in the device shown in the accompanying picture. After squeezing, the cable is seized by eight turns of wire. At intervals of 30 ft. the suspender castings are being bolted around the cable. Final wire wrapping will not be begun until the bridge has been completed and the cable has taken its full load.

Continued Support of E.C.P.D. Voted by Engineering Examiners

The National Council of State Boards of Engineering Examiners, at its 16th annual meeting held in Columbus, Ohio, Oct. 23-25, voted to continue to participate in the activities of the Engineers Council for Professional Development. This vote came two weeks after the action taken by the Engineers Council for Professional Development putting itself on record as disclaiming any intention to set up a certifying agency in conflict with the legal registration of engineers or to parallel or supplant the National Bureau of Engineering Registration established by the National Council of State Boards of Engineering Examiners in 1932. Thus the threat of a breach between the two organizations has been eliminated.

T. Keith Legaré, executive secretary, in his annual report stated that the National Council now is composed of 31 state boards representing approximately 40,000 registered engineers. He stated further that eight states have adopted engineer registration laws during 1935 and that nine other states have such laws pending.

The resignation of Herbert D. Mendenhall from the board of directors was accepted, and resolutions were adopted felicitating Mr. Mendenhall for his long service to the profession.

Officers elected for the ensuing year were: President, James L. Ferebee; vice-president, Prof. J. S. Dodds; directors, C. G. Massie, Dean R. A. Seaton, W. Austin Smith, and Prof. S. H. Graf. T. Keith Legaré was re-elected executive secretary and Perry T. Ford was appointed central zone member of the committee of the National Bureau of Engineering Registration.

The next annual meeting is to be held in Knoxville, Tenn., in October, 1936.

Combined Sewage-Garbage Treatment Discussed By Central States Group

COMBINED garbage and sewage sludge treatment, a new rapid oxygen demand determinator, diffuser plate studies and mechanical filters were the outstanding subjects treated in the two-day sessions of the Central States Sewage Works Association Oct. 25 and 26 at Urbana, Ill., attended by 150 sanitary engineers, operators and sewage works officials representing the four states of the association which comprises Illinois, Indiana, Minnesota and Wisconsin.

Experience at Indianapolis

Following experiments of a few years back on the combined treatment of garbage and sewage a few cities have gone farther and handled both wastes in sewage plants. On May 1 one of the digesters in the Indianapolis garbage reduction plant exploded and rather forcibly brought to a head a plan to experiment with garbage grinding and subsequent disposal in the sewage treatment plant located nearby. C. K. Calvert, superintendent of both plants and S. L. Tolman, sanitary engineer, The Jeffrey Manufacturing Co., described a temporary garbage grinding plant and the results of putting the ground product into one channel of the main grit chamber of the sewage plant. The grinder was a 10-ton per hour Jeffrey swing-hammer mill driven by a 50-hp motor, into which 50 gal. per minute of raw sewage was pumped to carry the ground material along. Velocities in the grit chamber varied from 0.5 ft. per sec. to 1.25 ft. At the lower velocity excessive deposits occurred and at the higher rates heavy material was carried along creating stoppages in the lines carrying primary sludges from the rapid settlers to the digestion pits. A 0.75-ft. velocity was finally adopted. Heavy bones, tin cans and large pieces of glass were picked out after the first 30 days operation. Skimmed material increased from 0.74 cu.ft. to 2.97 cu.ft. per million gallons of sewage and grit from 3.4 to 13.6 cu.ft. No difficulty was caused in the activated sludge plant nor was there trouble in handling of sludge from the activated sludge or plain aeration settlers. Sludge is digested at Indianapolis in open pits and the authors stated the addition of garbage had no effect on the odor. On the basis of the B.O.D. remaining in the final effluent it was stated that the addition of the garbage may require an increase in plant capacity and power of about 16 per cent in the case of plain aeration and less than 3 per cent in the case of activated sludge. Conclusions were: 1. Ground garbage may be disposed of with little increase in ordinary plant capacities. 2. The cost of garbage disposal with the sewage appears to be more economical over a period of years than by the reduction by-product process.

Digestion of Garbage with Sludge

Donald E. Bloodgood, engineer in charge of the Indianapolis activated sludge plant reported results of experiments on the digestion of garbage with sewage sludge. Conclusions were as follows: 1. Daily charges of primary sludge, activated sludge and garbage, in which the garbage volatile is 33 per cent of the total volatile, digested for nine days at 85 deg. F., produced 562 cc. or gas (CO_2 content of 32.7 per cent) per gram of volatile added with a resulting decrease in volatile solids of 59.9 per cent. 2. Attention is called to the absolute necessity for keeping down the material which collects at the surface of the tank. 3. Digestion takes place at a more rapid rate when garbage is present in a sludge mixture. 4. The quantity of gas produced per unit of volatile garbage solids is at least twice that produced from primary and activated sludges.

F. H. Whitely, graduate research assistant, University of Illinois, in reporting on an investigation of the amount of garbage which can be digested with Imhoff, aerated and activated sewage sludge, first in bottles then in 55-gal. steel tanks, indicated wide variations due to the variation in composition as to vegetables, proteins, starches, etc., on different days of week and different seasons. Variations from 32 to 92 per cent of garbage to fresh sludge were tried. No consistent gas formation was obtained and one of four barrels produced no gas at all. Winter temperatures were seriously prohibitive of activity.

Mechanical determination of oxygen utilization

A new mechanical device for rapid determination of oxygen utilization has been perfected by Carl H. Nordell for the purpose of testing the condition of activated sludge-sewage mixtures. It permits an evaluation or measurement of the free oxygen in parts per million per hour of free oxygen. It is called the odeeometer, a short expression for oxygen demand meter, and depends on the shrinkage in the volume of air in a closed vessel containing the sewage measured in a capillary tube containing an oil globule piston.

L. H. Kessler, assistant professor of hydraulic and sanitary engineering, University of Wisconsin, described the device and its place in the control of the activated sludge plant at Monroe, Wis., and other places. The great advantage over the customary 5-day B.O.D. determination is the speed, 1 hr. or less, with which tests may be made. For scientific activated sludge plant operation the author stated five factors were essential all of which could be obtained by the machine: 1. Immediate oxygen demand of the raw sewage-activated sludge mixture. 2. "Activity" of the particular sludge. 3. Incoming sewage load on the plant comparable with B.O.D. 4. Progress of oxidation of sewage sludge mixture. 5. Time required for effective or efficient treatment. At Monroe are six aeration tanks and the aeration period based on sewage flow and return sludge would vary from 10 hr. to 16 hr. with an average of 12 hr. Knowing the capacity required to produce a given result, the "activity" of the mixed liquor and amount of oxygen at each point of the process, "stepped" aeration can be used intelligently in determining how much sludge to return and how to get the most out of each aerator.

Results of magnetite filters

The results of magnetite filters in sewage treatment at Dearborn, Coney Island, Perth Amboy, the Chicago North Side experiment plant and Atlanta were given by S. I. Zack, sanitary engineer, Filtration Equipment Corporation. His conclusions were as follows: 1. This filter is mechanically adaptable to filtering plain, settled, chemically treated sewages, activated sludge aeration liquors and trickling filter effluent. 2. Maximum rates up to 6 gal. per square foot per minute and average rates from 2 to 3 gal. have been demonstrated. 3. Suspended solids removed are in direct ratio to the amount of solids reaching the filter. Removals average 25 to 60 p.p.m. 4. Normal loss of head reaches a maximum of 3 in. of water. 5. The filter irons out irregularities of non-uniform settling, reduces tank capacities necessary and chemicals required to get the same effluent, reduces days necessary requiring chemical dosage and provides a mechanical means of polishing up activated and trickling filter effluents.

George J. Schroepfer, assistant chief engineer, Minneapolis-St. Paul sewage disposal project, described the present status of the project. Some 33 major contracts totalling $6,580,000 are under way involving 88 per cent of the length of the intercepting sewers used in common by the two cities. Contract for the screen and grit chamber has been let and plans are under way for the balance of the disposal plant which consists in addition mixing and flocculating tanks and settling tanks and chlorination with a sludge disposal process consisting of vacuum filtration and incineration.

Award for the best paper for the previous year was presented to the late J. A. Childs, sanitary engineer, Minneapolis-St. Paul Sanitary District. The officers for the ensuing year are as follows: President, O. M. Leonard; vice presidents, H. E. Babbitt, F. M. Dawson and G. J. Schroepfer; secretary-treasurer, G. H. Radebaugh, Urbana; representatives to board of control of the Federation of Sewage Works Associations, W. W. DeBerard and James L. Ferebee. Next year's meeting is to be in Indiana.

Corps of Engineers Studies New River Flood Control

Army engineers of the Huntington, W. Va., district, under Major J. F. Conklin, are now studying the feasibility of the construction of the Bluestone reservoir dam on the New River near Hinton, W. Va. A sum of $1,000,000, of which $800,000 is for the acquisition of land, has been made available by President Roosevelt to begin work on the proposed power and flood control project, the entire cost of which is estimated at about $13,000,000.

Present proposals call for a dam 150 ft. high and 1,850 ft. long. When full, the reservoir, created by the dam, will be 35 miles long and will have a capacity of 635,000 acre-ft. The reservoir will be used to regulate the flow and to prevent floods in the Kanawha Valley, and also to produce hydroelectric power.

The project will aid in flood control, prevention of soil erosion and stream pollution, and power development. Sale of power is expected to make it self-liquidating.

It is part of the flood control program for the tributary streams of the Mississippi River favorably reported by the War Department and subsequently approved by the Mississippi River Commission and the Secretary of War, who sent the report to Congress on January 29, 1935. The survey was authorized by Congress by the Rivers and Harbors Act of January 21, 1927, and the Flood Control Act of May 15, 1928. The project also was included in the comprehensive program of public works prepared last fall under direction of the President.

SOCIETY CALENDAR

INTERNATIONAL ACETYLENE ASSOCIATION, annual meeting, Cleveland, Ohio, November 12-15.

HIGHWAY RESEARCH BOARD, annual meeting, Washington, D. C., December 5-6.

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, annual convention, Miami, Fla., December 9-12.

NATIONAL RIVERS & HARBORS CONGRESS, special meeting, New Orleans, La., December 13-14.

AMERICAN ENGINEERING COUNCIL, annual meeting, Washington, D. C., January 9-11, 1936.

AMERICAN ROAD BUILDERS' ASSOCIATION, annual convention and road show, Cleveland, Ohio, week of January 20, 1936.

WISCONSIN SECTION, AMERICAN WATERWORKS ASSOCIATION, annual meeting, Sheboygan, Wis., November 4-6.

NORTH CAROLINA SECTION, AMERICAN WATER WORKS ASSOCIATION and NORTH CAROLINA SEWAGE WORKS ASSOCIATION, annual joint convention, Durham, N. C., November 4-6.

MISSOURI VALLEY SECTION, AMERICAN WATER WORKS ASSOCIATION, Des Moines, Iowa, November 6-8.

VIRGINIA SECTION AMERICAN WATER WORKS ASSOCIATION and VIRGINIA SEWAGE ASSOCIATION, annual conference, Roanoke, Va., November 7-8.

EXPOSITION OF CHEMICAL INDUSTRIES, fifteenth annual exposition, New York City, December 2-7. Metals and alloys, plastics and plant equipment will be included among the exhibits.

THE ENGINEERS CLUB OF LOS ANGELES has elected the following officers for 1936: Carl A. Heinze, president; Donald M. Baker and E. W. Rockwell, vice presidents; J. F. D. Writhrow, secretary; C. L. Pierce, treasurer.

MASSACHUSETTS STATE ENGINEERS ASSOCIATION at the annual meeting, October 22, elected the following officers: Joseph Peterson, president; Samuel E. Killam, vice president; Philip Weinberg, treasurer.

Alabama Materials Labratory Aids Highway Economies

The Alabama State Highway Department, seeking to lower the cost of road building and surfacing through the utilization of local materials, has established a testing laboratory, that has already located several material sources that the engineers did not previously know existed. H. H. Houk, chief engineer of the department said that the laboratory in the last few months had saved various counties and the state several thousands of dollars in road building costs. Extensive search is made in the vicinity of each project to discover what materials, sand, gravel, shale and rock may be available in those localities. Gravel and other materials are being placed on some new roads at a cost of 50c. per cu.yd., where it had previously cost between $4 and $6 per cu.yd.

No Retrial of Land Value Suit Over Grand Coulee Dam Site

The law suit over the value of land on which the Grand Coulee Dam is being built was tried in Spokane, Wash., last summer. Land owners asked $5,000,000 for a total of 840 acres of land which the Bureau of Reclamation sought to acquire by process of condemnation for $15,000. After a prolonged hearing with much legal and engineering arguments the jury decided the claimants were entitled to $17,339. Request for new trial, after having been under advisement for some weeks, recently has been denied.

National Professional Society Holds First Meeting at Columbus

THE National Society of Professional Engineers, organized in May of last year, held its first annual meeting at Columbus, Ohio, Oct. 23-25, in connection with the annual meeting of the National Council of State Boards of Engineering Examiners. The Ohio Society of Professional Engineers acted as host and succeeded in having the welcome made a city-wide affair with electric signs on the city hall and other public buildings. The lobby of the Deshler-Wallick Hotel was given over largely to an engineering exhibit.

Joint sessions were held by the National Society of Professional Engineers and the National Council of Engineering Examiners on Wednesday and Thursday. The attendance exceeded 1,200, representing 38 states. Action taken separately by the National Council is reported elsewhere in these pages.

The joint meeting on Thursday was addressed by D. B. Steinman, president of the society, on The National Society and Professional Consciousness, and, at a banquet held jointly by the two societies Robert Williams, president of Ohio Northern University, spoke on The Future of The Society, Arthur V. Sheridan, editor of the *American Engineer*, the society's publication, spoke on The Engineer as a Member of Society, and A. J. Weaver, former Governor of Nebraska, discussed Conservation of National Resources. Both Dr. Steinman and Mr. Sheridan also spoke over broadcasting station BNS.

Title "Engineer" used

The society, through the adoption of a formal resolution, went on record as urging "all persons entitled by law to use the appellation, professional engineer, to address their fellow members of the profession as 'Engineer' John Doe." Use of the title "Engineer" was made the order of the day at the convention and was generally used.

Engineering on public works

Lack of adequate opportunity for engineers to contribute of their professional talents in the formulation and application of the present public-works program was brought to the attention of the convention in the form of a resolution disclaiming responsibility for conditions resulting from the elimination or subordination of engineering in this work. This resolution was actively discussed, there being considerable amount of opposition, but the motion was adopted by a large majority.

Other resolutions adopted called for appointment of a committee to look into the matter of preparing a national roster of engineers; a resolution discountenancing "any attempt to establish agencies other than those having the sanction and authority of law to define or describe the practice of engineering or prescribe the use of the professional designation engineer"; a resolution favoring the registration of engineers in the District of Columbia; and a resolution calling for the creation of a new position in the President's cabinet, that of Secretary of Public Works.

The society adopted an emblem, black and gold, carrying a triangle and circle, the name of the society and date of founding.

The officers elected for the coming year were D. B. Steinman, of New York, president; Thomas W. Batten, of Pennsylvania, first vice president; Hugh A. Kelly, of New Jersey, second vice president, Perry A. Ford, of Ohio, treasurer. The board of directors at a subsequent meeting selected Willard S. Conlon, of Washington, D. C., as secretary.

Headquarters for the society were established in Washington in May with Mr. Conlon acting as secretary. At the Columbus meeting the society voted to hold its next annual meeting in Washington. S. W. Moulding, representing the recently organized District of Columbia Society of Professional Engineers, promised that land for the site of a national headquarters would be donated before the time of the meeting. Four members donated $1,000 for the immediate financial needs of the organization and to permit expansion of activities.

Full Amount of Allotment Not Available for Brazos

Closely following the action of the board of directors of the Brazos River Conservation and Reclamation District authorizing the issuance of $10,000,000 of bonds, to supplement the supposedly final allotment by President Roosevelt of $30,092,345 for the construction of thirteen dams and power plants on the Brazos River in Texas, official notice from Washington stated that the President has allotted only $100,000 for this work. The directors were of the belief that the original approval of the grant for this project was final and that the entire sum would be available for the work.

Direct reports from Washington indicate, however, that Presidential authorization of $30,092,345 for the Brazos River flood control and irrigation project in Texas does not mean that this money is immediately available, but simply indicates that the Texas WPA director is authorized to allot funds to this extent if he sees fit. The Brazos project is one of the list of approved projects on which WPA money can be expended. Since this list includes many more projects than can possibly be fitted into the program, it is questionable what proportion of the sum will be made available in the near future.

The exact amount immediately available for the Brazos project will be set by the state WPA director with regard to such factors as the number on relief rolls near the work.

The legislature by an act remitting state ad valorem taxes in a group of twelve counties in the Brazos River watershed and appropriating the amount for the payment of interest and maturities on the proposed bonds made $309,000 available annually for a period of twenty years.

Eight Treatment Plants For Atlanta Sewage District

Seven new sewage treatment plants will be constructed, and one of the three existing plants will be enlarged and improved by the city of Atlanta, Ga. The work will be financed by a combination of federal fund city bond issue authorized by referendum vote on Sept. 18 (*ENR*, Sept. 26, 193 p. 446), and a contribution by Fulton and Dekalb counties of part of the cost of the construction which will benefit these two counties. The two largest plants will be built by contract, but it is not yet decided whether the work will be as PWA or WPA projects.

The city of Atlanta now has three heavily overloaded sewage treatment works constructed in 1910 to 1914, consisting of Imhoff tanks and sprinkling filters. Of these, the Intrenchment Creek plant will be increased in capacity to 14 m.g.d. and further treatment added to secure a more stable effluent than could be secured by the present plant, even if not overloaded. The Proctor Creek plant and the Peachtree Creek plant will be abandoned and in their place a 42 m.g.d. plant will be erected near the Chattahoochee River. This new plant will be named the R. M. Clayton plant. A 6 m.g.d. plant will be constructed in the South River area. Five other plants, with capacities of from 0.25 to 2 m.g.d. will be constructed, of which three will not receive any of the sewage from Atlanta proper, but are inside the thickly settled suburban area around Atlanta and included in the territory, in which it is hoped to create The Atlanta Sewer District.

Modified chemical precipitation with light dosing, followed by sprinkling filters and secondary settling tanks, will be used at the Intrenchment Creek and South River plants. At the R. M. Clayton plant, plain sedimentation will be the usual practice, but provision will be made for supplemental treatment by chlorination and chemical precipitation when the flow of the river is insufficient for the disposal of the effluent by dilution.

At all three of the larger plants, sludge will be treated in separate digestion tanks, and at the R. M. Clayton plant it will probably be dried by vacuum filtration and then used as a fill on the low property at the plant.

Wiedeman & Singleton of Atlanta, are designing engineers for the Clayton and Intrenchment plants. Clarke Donaldson is chief of construction for the city of Atlanta, and Wm. A. Hansell, assistant chief and engineer of sewers.

Inclusive Program Planned for Highway Research Meeting

A comprehensive program, covering a number of topics of interest to highway engineers and to the highway industry, has been prepared for the fifteenth annual meeting of the Highway Research Board of the National Research Council, to be held in Washington, D. C., on Dec. 5 and 6. A preliminary list of topics to be discussed at the meeting includes highway transportation economics, highway design, materials and construction, maintenance, traffic and safety, and soils investigations. These six major topics are further divided so that some 28 individual topics are to be presented for discussion.

Obituary

HUBERT L. MCNEVEN, 33, bridge inspector for the Hornell, N. Y., office of the state highway department, died Oct. 18, in Belmont, N. Y.

CLINTON P. KENDALL, instructor of engineering at the Coast Guard Academy, New London, Conn., died recently at Landgrove, Vt. Commander Kendall was 48 years old.

DAVID E. STATLER, Lyons, N. Y., died at his summer home in Somersetshire, England, on Oct. 25. Mr. Stalter, who was retired, was an engineer and contractor and had built the New York State barge canal through Wayne County. He graduated in civil engineering from the Ohio State University and for a time served in the Spanish-American war. He later became a member of Sherman, Stalter & Co., contractors.

RUPERT A. PHELPS, highway contractor, of Montpelier, Vt., died suddenly while supervising work on his contract with the Vermont State Highway Department near Pittsfield, Vt. Mr. Phelps was a native of Ripton, Vt., and had received his engineering education at Middlebury College, Middlebury, Vt.

JULIAN W. WOODWELL, consulting engineer, New York City, died on Oct. 24 at the age of 62. Mr. Woodwell had been consulting engineer to the board of trustees of Bellevue Hospital and other hospitals. He entered engineering work after his graduation in 1896. For a time he was chief engineer of the Treasury Department in charge of construction of public buildings. After leaving this division in 1908 he became engaged in designing and constructing power plants.

BOULAN CAUCHON, planning authority, died in Ottawa, Can., on Oct. 28 at the age of 63. Mr. Cauchon started his engineering work at the age of 16 with the Quebec & Lake St. John Ry. and soon went with the Canadian Pacific where he remained for about twenty years. From 1907 to 1909 he was assistant engineer to the Board of Railway Commissioners. He later became interested in town planning. He is credited with developing the district commission plan in Ottawa and with creating the hexagonal system of planning.

CONSTRUCTION STATISTICS FOR THE WEEK

ENGINEERING awards total $28,329,000, a drop from the record volume last week but higher than the average week to date this year. This total is made up of: private, $8,768,000, and public, $19,561,000; of which $4,250,000 is federal and $15,311,000, state and municipal. Corresponding figures a year ago were: total, $39,922,000; private, $5,815,000; public, $34,107,000; federal, $4,966,000 and state and municipal, $29,141,000.

The classification of this week's construction volume is waterworks, $1,015,000; sewerage, $1,940,000; bridges, $1,185,000; industrial buildings, $3,055,000; commercial buildings, $4,065,000; public buildings, $6,470,000; earthwork, irrigation, waterways, $1,937,000; streets and roads, $6,307,000.

The larger contracts for the week include: first unit of $1,000,000-factory for Chevrolet Motor Co., Indianapolis, Ind.; exchange and office building, Tri-State Tel. & Tel. Co., St. Paul, Minn., $1,500,000; Andrew Jackson High School, Springfield, N. Y., $1,384,000; post office, Buffalo, N. Y., $1,175,000; highway awards by Iowa, $529,000; by Kentucky, $542,000; by New Jersey, $593,000 and by Tennessee, $439,000; three contracts for earthwork in Mississippi River below New Orleans and in Bonnet Carre New Orleans Levee, $583,000; and 140-mi. oil pipe line, Simrall Pipe Line Co., Mt. Pleasant, Mich., $1,000,000.

New capital for the week includes $400,000 in corporate security issues, and $7,870,000 in state and municipal bond sales. A small net reduction is recorded in PWA allotments outstanding due to reductions and changes from loans and grants to grants only. The balance of the new capital reported is due to added approvals of WPA allotments.

CONTRACTS
(Thousands of Dollars)

	Weekly Oct. 1934	Average Prev.4 Week	Week Oct.31 1935
Federal Government	$3,034	$7,140	$4,250
State and municipal	15,844	18,557	15,311
Total public	$18,878	$25,697	$19,561
Total private	3,747	12,879	8,768
Week's total	$22,625	$38,576	$28,329

Cumulative to date:
1934..$1,164,951,000 1935..$1,199,672,000

NEW PRODUCTIVE CAPITAL
(Thousands of Dollars)

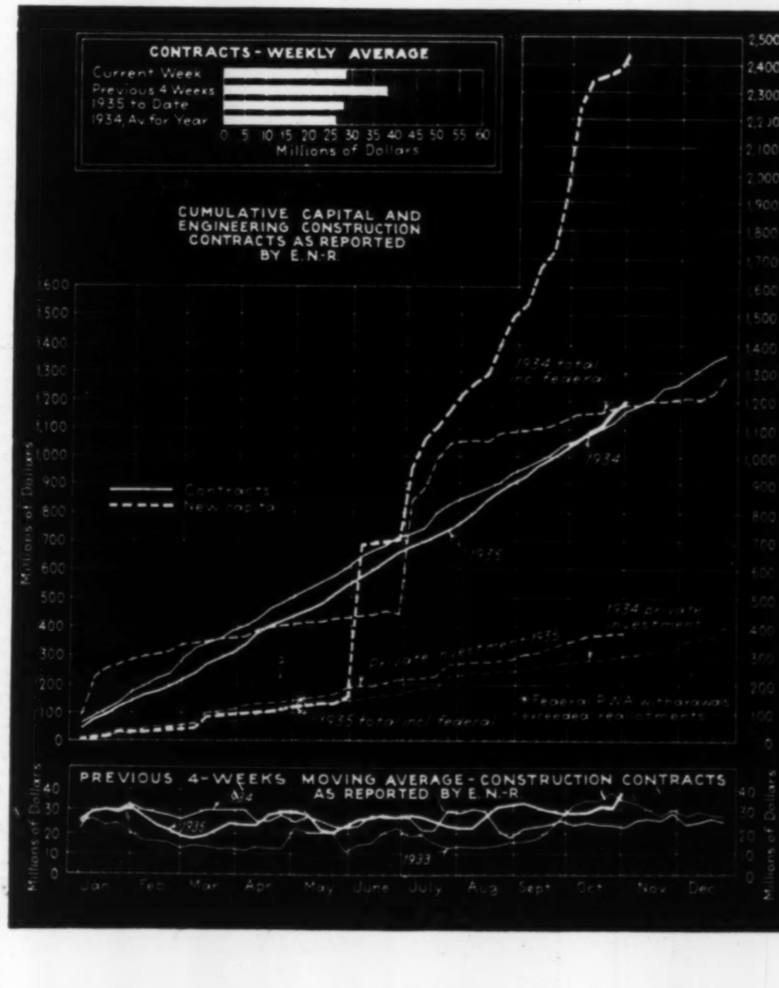
1935	Week Oct.24	Cumulative
State and municipal ...	$7,870	$356,951
PWA allotments, S&M.	—837	750,725
RFC loans, S&M	....	48,180
Corporate issues	400	27,738
PWA private	....	9,086
Local contrib. to WPA.	939	26,748
Total non-federal ...	$8,372	$1,219,428
PWA federal	35,326	1,208,751
Total new capital ...	$43,698	$2,428,179

Cumulative to date:
1934..$1,183,414,000 1935..$2,428,179,000

Note: These figures include private bonds, and stocks sold for productive purposes; state and municipal bonds for construction; PWA loans and grants to states and municipalities, including the special highway funds; PWA private loans, and allotments for federal construction, deficiency act funds. An arbitrary percentage (25%) of the WPA allotments and local contributions to WPA work is included to allow for the capital additions through the Works Progress Administration division of the new program.

INDEX NUMBER

ENR Cost	1913 = 100	1926 = 100	ENR Volume	1913 = 100	1926 = 100
Oct., 1935...	**195.10**	**93.82**	**Sept., 1935..**	**127**	**56**
Sept., 1935 ..	195.10	93.82	Aug., 1935..	140	61
Oct., 1934...	200.86	95.55	Sept., 1934..	94	42
1934(Av.)...	198.10	95.23	1934(Av.)...	114	50
1933(Av.)...	170.18	81.80	1933(Av.)...	102	47
1932(Av.)...	156.97	75.45	1932(Av.)...	127	56



Current Construction Unit Prices

Missouri River Pile Dikes

CONTRACT for 20,415 lin. ft. of standard pile dikes and 6,000 lin. ft. of revetment to be constructed on the Missouri River was awarded in July, 1935, by the U. S. Engineer Office, Kansas City, Mo. Eleven bids were submitted with alternative proposals based on the government furnishing the materials, the estimated cost of which was arbitrarily set at $247,535 for bid comparison. With the contractors furnishing the materials, the cost was indicated as much as 20 per cent greater than the arbitrary figure established.

The following tabulation lists the unit prices and the totals of the three low bidders. (A) Woods Bros. Construction Co., Lincoln, Neb. (contract), $603,906 (includes est. cost of govt. furnishing materials; (B) Massman Construction Co., Kansas City, Mo., $616,287.60 (add $46,257 to materials cost if furnished by contractor); (C) Addison-Miller Inc., St. Paul Minn., $644,903.60 (add $25,553 to materials cost if furnished by contractor).

UNIT PRICES—MISSOURI RIVER DIKES

	A	B	C
I—Labor & materials—pile dike			
1. Lumber mattress—17,350 square	.....	$9.50	$9.50
2. Stone, mattress, dike—17,590 cu.yd	.....	3.95	4.00
3. Stone paving—300 square	.....	.....	22.00
Stone, alternative—1,100 cu yd	.....	5.50	6.00
4. Piles, stringers, braces—493,000 lin.ft	.....	.57	.58
IA—Labor only—pile dike			
1a. Lumber mattress—17,350 square	$5.00	5.35	6.00
2a. Stone mattress—17,590 cu.yd	3.70	3.95	4.00
3a. Stone paving—300 square	.....	.....	22.00
Stone, alternative—1,100 cu.yd	7.00	5.50	6.00
4a. Piles, stringers, braces—493,000 lin.ft	.24	.24	.26
II—Labor & materials—revetment			
1. Lumber mattress—5,160 square	.....	9.50	9.50
2. Mattress stone—6,620 cu.yd	.....	3.95	4.00
3. Stone paving—40 square	.....	.....	22.00
Stone, alternative—150 cu.yd	.....	5.50	6.00
4. Anchor piles—160 lin.ft	.....	.57	.60
5. Piles, stringers—114,200 lin.ft	.....	.57	.58
IIa—Labor only—revetment			
1a. Lumber mattress—5,160 square	5.00	5.35	6.00
2a. Mattress stone—6,620 cu.yd	3.65	3.95	4.00
3a. Stone paving—40 square	.....	.....	22.00
Stone, alternative—150 cu.yd	7.00	5.50	6.00
4a. Anchor piles—160 lin.ft	.60	.57	.60
5a. Piles, stringers—114,200 lin.ft	.24	.24	.26

◆

Railroad Relocation, Tygart River Dam

RELOCATING 12.2 miles of Baltimore & Ohio R.R. made necessary by the Tygart River dam construction is under way near Grafton, W. Va., with the award of contract in September, 1935, by the U. S. Engineer Office at Pittsburgh, Pa., Major W. D. Styer, district engineer in charge of operations. In addition to roadbed and track, construction includes two steel bridges of 100 ft. deck plate girders, open type timber decks of six and twelve spans respectively, over the Tygart River and Pleasant Creek valleys; 500 ft. of concrete lined tunnel 20½ ft. wide by 27 ft. 9⅞ in. high; 2,250 ft. of concrete lined tunnel 18 ft. wide by 26ft. 6⅞ in. high; nine highway underpasses and two overpasses; and 2,800 ft. of 18 ft., four-course 10-in. bituminous macadam pavement.

The railroad furnishes f.o.b. job siding all required track materials, and rails for bridge seats, except spikes, bolts, ties and ballast.

Unit prices follow for the contract proposal for the two sections combined, and the low bid for each of the sections are treated separately. The successful bidder, although not low on either separate section, attained the low on the combined proposal by reductions of $1.00 per cu.yd. for the large tunnel excavation and 45c. per ft. for main track work. (A) Guthrie, Marsch, Walker Co., Chicago, Ill. (contract), $2,935,217, a reduction of $128,618 from separate section basis; (B) Foley Bros., Inc., New York, N. Y. (low on Sect. I) $2,998,788, a reduction of $68,254 from separate section basis; (C) Seeds & Derham, Philadelphia, Pa. (low on Sect. II) with no combined bid but a total of $2,987,176 for both sections.

B. & O. R.R. RELOCATION, TYGART DAM

Section I	A	B
1. Clear & grub—total	$3,150	$12,500
2. Grading, excav. misc.—913,700 cu.yd	.48	.47
3. Excav. intercept'g ditches—2,700 cu.yd	.58	.50
4. Excav. stream diversion—3,100 cu.yd	.53	1.00
5. Excav. fdt. general—14,998 cu.yd	.90	1.00
6. Excav. fdt. bridge—2,182 cu.yd	4.00	2.00
7. Excav. fdt. rock—1,850 cu.yd	4.50	5.00
8. Steel reinforcing—597,345 lb	.039	.04
9. Concrete, Cl. A—4,716 cu.yd	15.40	14.14
10. Concrete, Cl. B—19,075 cu.yd	12.43	12.23
11. Concrete, Cl. A. tunnels—2,235 cu.yd	14.50	15.20
12. Concrete, Cl. A. tunnel backfill—1,186 cu.yd	10.85	7.52
13. Drill 2 in. holes—200 lin.ft.	1.40	1.00
14. Culvert, 24 in. reinf. conc.—1,158 lin.ft	4.00	3.44
15. Culvert, 36 in. reinf. conc.—1,280 lin.ft	6.75	5.97
16. Culvert, 48 in. reinf. conc.—824 lin.ft.	10.50	10.15
17. Struct. steel, bridges—76,300 lb	.04	.037
18. R.R. main track, complete—33,465 lin.ft.	3.85	4.83
19. R.R. side track, complete—4,800 lin.ft	3.25	2.99
20. Turnouts, No. 10, complete—2, each	400.00	460.40
21. Pleasant Valley Creek bridge—total	109,000	118,825
22. Membrane waterproofing—576 sq.yd	2.00	.80
23. Membrane waterproofing, protected—741 sq.yd	4.00	2.40
24. Asphalt emul. waterproofing—5,472 sq.yd	.80	.45
25. Exc. tunnel, misc.—13,269 cu.yd	4.50	3.85
26. Tunnel timbering—94.4 M.B.M	92.00	90.00
27. Tunnel steel supports—130,000 lb	.055	.05
28. Tunnel tile drains—3,800 lin.ft	.25	.43
29. Vitrif. split drain, 24 in.—1,785 lin.ft	2.00	1.42
30. Vitrif. split drain, 36 in.—40 lin.ft	4.50	3.51
31. Corr. iron pipe, 6 in. perfor.—3,673 lin.ft	.95	.78
32. Corr. iron pipe, 6 in.—115 lin.ft	1.00	.75
33. Corr. iron pipe, 18 in.—128 lin.ft	3.00	2.51
34. Corr. iron pipe, 24 in.—96 lin.ft	4.50	3.83
35. Corr. iron pipe, 36 in.—100 lin.ft	8.25	7.18
36. Grade crossing, complete—245 sq.yd	3.50	2.00
37. Right-of-way fence—66,000 lin.ft	.12	.10
38. Fence gates—28, each	10.00	13.00
39. W. I. Well casing, 6 in.—100 lin.ft	1.50	1.67
40. W. I. Well casing, 8 in.—100 lin.ft	2.25	2.16
41. W. I. Well casing, 12 in.—50 lin.ft	4.00	3.70
42. Galv. W. I. pipe, 3 in.—600 lin.ft	1.00	1.70
43. Porous material—1,594 cu.yd	5.00	3.40
44. Rock protection—1,044 cu.yd	3.25	3.00
45. Riprap—95 cu.yd	5.00	4.00
46. Copper water stops, 16 oz.—2,025 sq.ft	.50	.35

Section II	A	C
47. Clear & grub—total	$3,000	$1,000
48. Grading, excav. misc.—986,300 cu.yd	.48	.515
49. Excav. intercept'g ditches—2,300 cu.yd	.58	.90
50. Excav. stream diversion—48,000 cu.yd	.48	1.35
51. Excav. fdt. general—14,087 cu.yd	1.00	1.15
52. Excav. fdt. bridge—895 cu.yd	4.00	1.70
53. Excav. fdt. rock—1,788 cu.yd	4.50	4.40
54. Steel reinforcing—430,746 lb	.039	.04
55. Concrete, Cl. A—7,150 cu.yd	17.00	15.90
56. Concrete, Cl. B—9,150 cu.yd	16.50	11.40
57. Concrete, Cl. A, tunnel—9,720 cu.yd	14.00	13.40
58. Concrete, Cl. A, tunnel back-fill—5,054 cu.yd	10.85	9.20
59. Drill 2 in. holes—200 lin.ft	1.40	.65
60. Culvert, 24 in. reinf. conc.—692 lin.ft	4.00	2.90
61. Culvert, 36 in. reinf. conc.—1,924 lin.ft	6.75	5.10
62. Culvert, 48 in. reinf. conc.—836 lin.ft	10.50	9.20
63. W. I. Well casing, 8 in., rock—1,300 lin.ft	5.00	4.60
64. Struct. steel, bridges—1,017,800 lb	.042	.06
65. R.R. main track, complete—31,435 lin.ft	3.85	4.50
66. R.R. side track, complete—4,700 lin.ft	3.30	3.60
67. Turnouts, No. 10, complete—3, each	400.00	750.00
68. Tygart River bridge—total	50,000	48,886
69. Membrane waterproofing—736 sq.yd	2.00	1.60
70. Membrane waterproofing, protected—1,197 sq.yd	4.00	2.40
71. Asphalt emul. waterproofing—3,143 sq.yd	.80	.90
72. Tunnel excav. misc.—51,975 cu.yd	5.00	4.50
73. Tunnel timbering—402 M.B.M	92.00	110.00
74. Tunnel steel supports—554,000 lb	.055	.065
75. Tunnel tile drains—16,875 lin.ft	.25	.20
76. Pumping station—total	7,500	5,000
77. Water pipe line—total	2,900	2,500
78. Water tank—total	6,000	5,000
79. Penstock—total	1,500	1,000
80. Vitrif. pipe drains, 24 in.—265 lin.ft	2.00	1.20
81. Vitrif. pipe drains, 36 in.—1,050 lin.ft	4.50	2.60
82. Corr. iron pipe, 6 in. perfor.—2,649 lin.ft	1.00	.80
83. Corr. iron pipe, 6 in.—82 lin.ft	1.00	.75
84. Corr. iron pipe, 18 in.—80 lin.ft	3.00	2.90
85. Corr. iron pipe, 24 in.—66 lin.ft	4.50	4.90
86. Corr. iron pipe, 36 in.—136 lin.ft	8.25	8.40
87. Asphalt conc. 4 course—8,800 sq.yd.	2.75	3.25
88. Grade crossing, complete—215 sq.yd	3.50	2.50
89. Right-of-way fence—57,000 lin.ft	.12	.12
90. Fence gates—28, each	10.00	25.00
91. W. I. Well casing, 6 in.—500 lin.ft	1.50	.90
92. W. I. Well casing, 8 in.—100 lin.ft	2.25	1.70
93. W. I. Well casing, 12 in.—100 lin.ft	4.00	3.40
94. Galv. W. I. pipe, 3 in.—800 lin.ft	1.00	1.20
95. Porous material—1,283 cu.yd	5.00	1.90
96. Rock protection—908 cu.yd	3.25	1.50
97. Riprap—58 cu.yd	5.00	2.50
98. Copper water stops, 16 oz.—9,100 sq.ft	.50	.50

CONSTRUCTION REPORTS

WATERWORKS

PROPOSED WORK

Calif., **Walnut Creek**—City commissioned G. T. Oliver, engr., Santa Fe and Montezuma Sts., Pittsburg, to prepare plans for water distribution system. $62,000. City seeks 80% from P.W.A. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Conn., Danbury—City, C. E. Bemoit, soon takes bids waterworks, incl. filtration plant. $570,000. P.W.A. grant allocated. Fulier & Everett, 22 East 40th St., New York, engrs.

Conn., Norwalk—City making plans waterworks, incl. mains, pumping and storing units. First taxing dist. $218,000. N. S. Hill, Jr., 112 East 19th St., New York, engr.

Ill., Duquoin—City received no bids Oct. 17, constructing waterworks improvements, incl. steel tank on tower, filtration plant, distribution mains, fire hydrants. $265,000. Will readvertise on revised plans. P.W.A. project. Russell & Axon, 4903 Delmar Blvd., St. Louis, Mo., engrs. Noted Oct. 2, C. D.—Oct. 10, E. N.-R.

Ill., Okawville—City soon takes bids waterworks system, incl. pumps, motors, steel tank on tower, distribution mains, fire hydrants, etc. P.W.A. project. Russell & Axon, 4903 Delmar Blvd., St. Louis, Mo., engrs.

Ia., Oelwein—City indefinitely postponed construction waterworks and distribution system. $51,000. P.W.A. grant not obtained. E. E. Schenk, Oelwein, engr. Noted June 21, C.D.—June 28, E.N.-R.

La., Mandeville—City plans waterworks system. Government $36,892, city $36,892. W.P.A. approved by President. J. Gidiere, New Orleans, engr.

Me., Sanford — Town, Water Dist., H. L. Clark, supt. and genl. mgr., Town Hall, making plans watermains and test wells. $26,300. P.W.A. project. Private plans by H. L. Clark, supt. and genl. mgr.

Mass., Leicester—Bd. Selectmen making plans additional water mains. $45,000. W.P.A. allocated $19,350 grant.

Mass., Northboro—Town, J. Wallen, clk. Bd. Selectmen, Town Hall, making plans standpipe and filter system. P.W.A. allotted $58,500 grant, total est. $130,000. Weston & Sampson, 14 Beacon St., Boston, engrs.; constructing 3 mi. c.i. pipe water mains, $150,000. P.W.A. project. Maturity soon. Whitman & Howard, 89 Broad St., Boston, engr. Noted Sept. 26, C. D.—Oct. 3, E. N.-R.

Minn., Onamia—Village, W. J. Eynor, clk., making plans constructing complete waterworks system. $42,000. P.W.A. allotted $32,820.

Mont., Conrad—City plans 60,000 ft. pipe line to new water supply $138,000. P.W.A. funds allotted. R. J. Kelly, city clk.

Neb., Harrison—City plans waterworks improvements. $40,000. P.W.A. funds allotted. J. Morrison, city engr.

Neb., Stella—Village, G. Haskins, clk., rejected bids Oct. 11, waterworks system. Will readvertise. $22,813. Henningson Eng. Co., Union State Bank Bldg., Omaha, engrs. Noted Oct. 7, C. D.

Neb., Trumbull—City plans waterworks. P. W.A. funds allotted. R. J. Coffey, 310 West 4th St., Hastings, engr.

N. H., Webster—State, water Resources Bd., R. S. Holmgren, ch. engr., State House, Concord, plans rein.-con. dam in Blackwater River. To exceed $25,000.

N. J., Atlantic Highlands—Boro, Water Dept., plans constructing sand filters and receiving well. $30,732. P.W.A. application. L. P. Booz, 263 Madison Ave., Perth Amboy, engr.

N. J., Camden—City plans constructing new wells, laying new mains and appurtenances necessary to extend city water service. $310,000. P.W.A. application. J. H. Long, ch. engr. Water Dept.

N. J., Matawan—Matawan Twp. plans water transmission mains and distribution mains in 2 sections. $53,083. P.W.A. application. C. J. Olsen, 23 Market St., Perth Amboy, engr.

N. J., Pine Hill—Boro plans municipal water system. $150,000. P.W.A. application. Remington & Goff, 509 Cooper St., Camden, engrs.

N. J., Spotswood—Boro plans public water supply and distribution system. $71,950. P.W.A. application. F. Buchanan, Boro Hall, boro engr.

N. J., Stone Harbor—Boro plans extensions to existing water distribution system. $52,000. P.W.A. application. Remington & Goff, 509 Cooper St., Camden, engrs.

N. Y., Bergen—Village making plans 200,000 gal. steel standpipe, pumps, and foundations. $51,800. Applied for P.W.A. funds. W. S. Lozier, 10 Gibbs St., Rochester, engr.

★ **N. Y., Brooklyn**—Dpt. Water Supply, Gas & Electricity, Municipal Bldg., New York, plans by I. Channin, engr. and archt., 122 East 42nd St., New York, 271x27 ft. pumping station, for waterworks, Neptune Ave. and East 23rd St. $500,000.

N. Y., Cohoes—City made plans extending water system, incl. laying 8 in. pipe lines. $22,000. Applied for P.W.A. funds.

N. Y., East Penfield—Village making plans extending watermains, from Brighton, N. Y. on Lake Ontario to East Penfield. $45,200, applied for P.W.A. funds. Civic Research Corp., 31 Exchange St., Rochester, engrs.

N. Y., Oneida—City making plans constructing filtration plant. $80,000. P.W.A. funds allotted. Barker & Wheeler, 36 State St., Albany, engrs.

N. Y., Ransomville—Town of Porter soon takes bid water supply and pumping station, here. $62,150. C. E. Pound, Youngstown, clk.

N. Y., Rushville—Village withdrew application for P.W.A. funds, for constructing water system. $65,600. May finance privately. W. S. Lozier, Inc., 10 Gibbs St., Rochester, engrs. Noted Oct. 2, C. D.—Oct. 10, E. N.-R.

N. Y., St. Regis Falls—St. Regis Falls Water Dist., Waverly, making plans water supply. $115,306. Applied for P.W.A. funds. M. W. Plumb, 4 Lawrence Ave., Malone, engr.

N. Y., Stillwater—Town plans water system, incl. 100,000 gal. elevated tank and c.i. mains. $70,000. P.W.A. loan and grant applied for. W. T. Field Eng. Co., Flower Bldg., Watertown, engrs.

N. Y., Wheatland—Munford Water Dist. plans tanks, filtration plant, $61,540. Applied for $27,693. P.W.A. grant. City Research Corp., 31 Exchange St., Rochester, engrs.

N. Y., West Penfield—Village making plans constructing steel standpipe, wells, pump, etc. $96,000. Applied for P.W.A. funds. W. S. Lozier, Inc., 10 Gibbs St., Rochester, engrs.

N. C., Ashboro—Municipality plans water distribution system and sewer lines. $80,000. A. Toplin, High Point, engr.

O., Mansfield—City preparing plans 5 mi. 10- to 14-in. c.s. or steel pipe and deep well. $100,000. P.W.A. funds allotted. W. C. Statler, City Hall, engr.

O., Maumee — City making plans extending waterworks, incl. 2 wells and softening plant, 1,000 ft. 10 in. pipe. $60,000. W.P.A. project. A. Hatch, Maumee, engr.

O., Painesville—City completing plans 6 m.g. concrete reservoir and distribution lines. $80,000. P.W.A. project. G. B. Gascoigne, Leader Bldg., Cleveland, consult. engr. Noted Oct. 21, C. D.—Oct. 24, E. N.-R.

O., Waterville—Town plans 200,000 gal. municipal filter plant. $36,000. P.W.A. project. G. Champe, Nicholas Bldg., Toledo, engr.

Okla., Alma—See "Sewerage and Waste Disposal."

Okla., Snyder—City plans waterworks system incl. dam on Otter Creek, to create 500 acre impounding reservoir for water supply. $68,000 bonds voted and $235,000 alloted by W.P.A. Construction will be done by Federal Government through Works Progress Administration. C. W. James, Midwest Bldg., Oklahoma City, engr. Noted Sept. 3, C.D.—Sept. 5, E.N.-R.

Tex., Colorado—City, c/o J. A. Sadler, mayor, election Nov. 12, to vote bonds constructing waterworks, incl. dam, reservoir, pipe, lines, etc. $184,000. P.W.A. project. R. D. Buchanan, Colorado, engr.

Tex., Deport—City voted $25,000 bonds for constructing waterworks, incl. distribution system, elevated tank, valves, fire hydrants, meters, etc. $63,000. P.W.A. project. W. M. Cook, Paris, engr.

Tex., Madisonville—City, T. L. Dunn, mgr., plans waterworks system. $47,000. S. S. Strahan, Madisonville, engr. P.W.A. funds allotted.

Tex., Plainview—City, T. V. Shelton, mgr., plans waterworks system, motor-driven turbine pumps, 150,000 gal. rein.-con. surface reservoir, elevated steel tank on 75 ft. steel tower, distributing system, 8 wells fully equipped. $100,000. P.W.A. project. J. E. Ward, Harvey-Snider Bldg., Wichita Falls, engr.

Wash., Port Townsend—Town plans water system, incl. supply line, 19th St., Sheriden and Hastings Ave. and Discovery Rd. $62,000. P.W.A. loan approved. B. Green, supt.

Wash., Ridgefield—Town plans waterworks system. $26,000. P.W.A. funds allotted. B. F. Wray, supt.

Wash., Snohomish—Town plans distribution system, involving 30,000 ft. 4, to 12-in. pipe. $47,273. P.W.A. approved loan. E. Lysons, supt.

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Federal Government projects symbol †

◆

Wash., Union Gap—Town plans bond election soon for constructing distribution system involving 68 0ft. 8 in., 2,460 ft. 6 in. and 14,910 ft. 4 in. mains, 2,400 ft. copper pipe, pump and pumphouse. $41,818. P.W.A. approved funds. G. D. Hall, Court House, Yakima, engr.

B. C., Kaslo—Municipality making plans extension to water supply. $15,000. A. L. McPhee, engr.

B. C., Vancouver—Municipality making plans extension to waterworks. $117,000. C. Brackenridge, city engr.

Ont., Freeman—Nelson Twp. plans water supply system. J. Breckon, engr.

Que., Sillery—Municipality plans reservoir. $18,000.

Que., Sillery—See Sewerage and Waste Disposal.

BIDS ASKED

Ark., Cabot—Nov. 6, by City, E. L. Bailey, mayor at State Capitol Bldg., Little Rock, city waterworks, plant and pipe line. $38,000. P.W.A. loan of $20,900; grant $17,100. F. A. Pritchett, Wallace Bldg., Little Rock, engr. Noted Oct. 9, C. D.—Oct. 17, E. N.-R.

Ark., Humphrey—Nov. 6, by City, at State Capitol Bldg., Little Rock, complete waterworks. $30,909 P.W.A. project. F. A. Pritchett, Wallace Bldg., Little Rock, engr. Noted May 9, 1933, C. D.—May 11, 1933, E. N.-R.

Ark., Marmaduke—Nov. 6, by City, I. A. Willyard, mayor, at State Capital Bldg., Little Rock, complete waterworks. $46,000. T. H. Allen, 65 McCall St., Memphis, Tenn., engr.

Calif., Bellflower—See "Contracts Awarded."

Ia., Fort Dodge—Nov. 7, by Webster Co., constructing 25,000 gal. capacity water tank, water house, 75 ft. tower. $4,000.

Ky., Louisville—See "Contracts Awarded."

Mass., Amesbury — Nov. 5, by Town, Bd. Water Comrs., Town Hall, constructing water system **(a)** constructing 1 m.g. circular rein.-con. covered reservoir **(b)** installing about 10,640 lin.ft. 12 in. and about 5,850 lin.ft. 6 in. c.i. bell and spigot watermains **(c)** furnishing c.i. pipe and fittings **(d)** gate valves and valve boxes **(e)** fire hydrants. $93,000. P.W.A. grant $41,850. Weston & Sampson, 11 Beacon St., Boston, engrs. Noted Sept. 5, C. D.—Sept. 12, E. N.-R.

Miss., Morton—Nov. 7, by A. T. Cooper, mayor, complete waterworks system, incl. deep well, storage tank, c.i. pipe and fittings. $43,577. P.W.A. project. F. P. Gates, 302 Millsaps Bldg., Jackson, engr. Noted June 24, C. D. June 27, E.-N.R.

Mo., Adrian—See "Contracts Awarded."

Mo., Pilot Grove—Nov. 5, by City Clerk, waterworks system. $37,000. W. B. Rollins & Co., 339 Railway Exch. Bldg., Kansas City, engrs. Noted Aug. 16, C. D.—Aug. 22, E. N.-R

N. J., Fairlawn—See "Contracts Awarded."

New York—Nov. 6, by Long Island State Park Comn., Belmont Lake State Park, Babylon, plans natural sand filter well or gravel packed well, for water supply at Fire Island State

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Waterworks (Continued)

Park, Suffolk Co. S. Shapiro, in charge engineering.

N. Y., Auburn—See "Contracts Awarded."

N. Y., Babylon—See "Contracts Awarded."

N. Y., Brighton—See "Contracts Awarded."

N. Y., Carmel—See "Contracts Awarded."

N. Y., Hornell—See "Contracts Awarded."

N. Y., Jeffersonville—See "Contracts Awarded."

N. Y., Montour Falls—See "Contracts Awarded."

N. Y., Rome—See "Contracts Awarded."

N. Y., Yonkers—See "Contracts Awarded."

Pa., Morrisville—Nov. 15, by Council, and T. B. Stockham, mayor, brick, concrete building for waterworks, new pumps, enlarged filter beds and basin, chemical room and enlarge well for pumping station. $38,350. Part of funds from W.P.A. Remington & Goff, 509 Cooper St., Camden, N. J., engrs.

Tenn., Dandridge—Nov. 8, by Mayor, waterworks, incl. 150 M flat bottom steel tank (on ground), with alternate asked for 100 M, pump house and complete distribution system, 14,910 ft. 2- to 6-in. c.i. watermains, 20 fire hydrants, 1 electrically operated, centrifugal, 100 g.p.m., 1 chlorinator, 60 meters, 1 master flow meter, 15x15 ft. brick, concrete pump house. $30,525. C. Wallace, Empire Bldg., Knoxville, engr. P.W.A. loan and grant allotted. Noted Oct. 14, C. D.—Oct. 17, E N.-R.

Tenn., Graysville—Nov. 7, by Mayor, waterworks. P.W.A. project. J. Campbell Wallace, Knoxville, engr. Noted Aug. 7, C. D.—Aug. 15, E. N.-R.

Tenn., Spring City—Nov 7, by Mayor, waterworks improvements. $45,455. P.W.A. project.

Tex., Tioga—Nov. 12, by City, c/o G. F. Smith, mayor, complete waterworks system, incl. well, pump, pump station and distribution system, meters, fire hydrants, fire hose, 19,590 ft. 2- to 8-in. c.i. pipe, 1 deep well turbine pump. $25,000. P.W.A. project. J. J. Rady, 400 Majestic Bldg., Fort Worth, engr. Noted Aug. 9, C.D.—Aug. 15, E.N.-R.

Utah, Escalante—Nov. 14, by Town Bd., furnishing, installing waterworks system, incl. supply line. $87,500. P.W.A. project. J. H. Clark, Panguitch, engr.

Utah., Minersville—Nov. 18, by Town Bd., furnishing, installing new water system. $36,363. P.W.A. project. M. P. Lewis, Milford, engr.

Wash., Spokane — Nov. 7, by City, F. G. Sutherin, comr. P. Utilities, switchboards, control devices, wiring Upriver Pumping Station; three 1,625 kva. generators with excitors and thrust bearings; seven 100,000 kva. 1,500 volt metal clad oil circuit breakers; 7 standard steel switchboard panels; control and indicating devices, conduit and cables. A. Lindsey, city engr. Noted May 23, C. D.—May 30 E. N.-R.

Ont., Ingersoll—Nov. 5, by H. G. Hall, chn. P. Utilities Comn., supplying deep well pump, 500 imp. g.p.m. against total suction and discharge head of 240 ft., pump setting 120 ft. diam. of wall 12 in.

Ont., Trenton—See "Contracts Awarded."

LOW BIDDERS

★ **Calif., Los Angeles** — Metropolitan Water Dist., 306 West 3rd St., Oct. 24, constructing precast concrete pipe, cast-in-place concrete pipe or steel pipe and appurtenance works, 10 mi. west of San Bernardino to point ½ mi. north of city of Glendora, Colorado River Aqueduct, from American Concrete & Steel Pipe Co., Firestone Blvd., Southgate, Schedule 5, 25 mi. feeder lines using precast pipe, $1,013,985***from Wood & Bevanda, Stockton, Schedule 6, $1,405,462; Schedule 7, $1,483,562***from United Concrete Pipe Co., 302 Ogier St., Los Angeles, Schedule 8, $1,127,785***from S. J. Groves, 509 Wesley Temple Bldg., Minneapolis, Minn., Schedule 4, $671,050***from Gunther & Shirley, 306 South 24th St., Omaha, Neb., Schedule 5, $663,520***Schedule 6, $697,475; Schedule 7, $759,790***from Western Pipe & Steel Co., 5717 Santa Fe Ave., Los Angeles, using steel, Schedule 8, $1,346,775. Owner furnishes materials for cast in place pipe. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

CONTRACTS AWARDED

Ark., Hughes—E. E. Barton, mayor, complete waterworks, to W. F. Volz Constr. Co., Baltimore, Bldg., Memphis, Tenn., $33,579. **P.W.A.** W. F. Moody & Co., Little Rock, engrs. Bids Oct. 16, awarded Oct. 16.

Calif., Bellflower—Bellflower Water Co., 8 and 6 in. mains in Clark and Cerritas Aves., day labor. To exceed $5,000.

Conn., Stamford—Town, laying 2,400 lin.ft. watermains town yard, also 30x60 ft., brick, storage building. $19,440. Owner builds. **W.P.A.** J. C. Williams, Town Hall, engr.

Ky., Louisville—Water Co., 435 South 3rd St., resetting boilers in River Pumping Station, own forces. $104,000. Capital outlay for new equipment, repairs, etc. for 1936, is expected to be $445,000. J. Chambers, 435 South 3rd St., ch. engr. of owners.

Me., Bar Harbor—Bar Harbor Water Co., F. C. Lyman, pres., 500,000 gal. steel standpipe, to Chicago Bridge & Iron Wks., 250 Stuart St., Boston, Mass. Bids Oct. 17, awarded Oct. [illegible]

Mass., Northampton — Commonwealth of Massachusetts, Dpt. Mental Diseases, State House, Boston, fire line and water supply in connection with work, also water and gas supply lines, at State Hospital, to National [illegible] & Constr. Co., 10 State St., Boston, $1,1[illegible] and $425 respectively. **P.W.A.** Bids Sept. 16, awarded Oct. 22.

Mo., Adrian—City, impounding reservoir, relief labor. $25,000. E. T. Archer & Co., 609 New England Bldg., Kansas City, engrs. Noted Sept. 3, C. D.—Sept. 5, E. N.-R.

Neb., Beaver City — City awarded contract tabular well for waterworks, Sect. 3, to Roy Anderson, Cedarvale, $4,250***200 gpm. pump, Sect. 4, to Interstate Mchy. & Supply Co., 1006 Douglas St., Omaha, $2,169. **P.W.A.**

Neb., Gordon — City, furnishing pipe, hydrants, valves, etc., for waterworks system, to Layne-Western Co., B. M. A. Bldg., Kansas City, Mo., $17,936; well and pump, to Dobson-Humphreys Co., Securities Bldg., Omaha, $5,924. Est. $25,559. **P.W.A.** Noted Oct. 1, C. D.

Neb., Jackson — City, well for waterworks, Sect. 2, to Rasmussen Bros. Well Co., 3604 4th St., Sioux City, Ia., $269; Pomona deep well turbine pump, Sect. 3, to Interstate Mchy. & Supply Co., 1006 Douglas St., Omaha, $609. Est. $4,917. **P.W.A.** Noted Sept. 25, C. D.

N. J., Fairlawn—Municipality purchasing fire hydrants and extending water mains, day labor and separate contracts. $1,354.

N. Y., Auburn—City constructing water mains in Riverside Blvd. and Locust St., $9,188; installing 1,700 ft. c.i. main in South St., $3,382, own forces. W.P.A. funds allotted. J. H. Tehan, city engr.

N. Y., Babylon—City constructing water system, own forces, using labor from relief rolls. $31,731. W.P.A. funds allotted.

N. Y., Brighton—Village, extending and improving water system, own forces. $22,262. W.P.A. allotted funds.

N. Y., Carmel—Township, water line in Brewster Ave., $8,485; improving various streets, $18,845, day labor. Owner will purchase materials. Noted Aug. 1, C. D.—Aug. 8, E. N.-R.

N. Y., Forest Home—City, water distribution system, to Street Bros., Constr. Co., 921 East Hiawatha Blvd., Syracuse. $25,875. **P.W.A.** Bids Oct. 10. Noted Oct. 16, C. D.

N. Y., Hornell—City repairing flood damaged reservoir at Fremont, near here, own forces. $70,000. W.P.A. funds allotted. F. H. Robinson, city engr.

N. Y., Jeffersonville—Municipality, constructing dam and reservoir for water supply, day labor. $12,000. Owner will purchase materials.

N. Y., Montour Falls—Village, repairing reservoir, excavating, removing gravel, reconstructing embankment, constructing weir to catch rubbish and repairing main crossing of creek, own forces using relief labor. $33,000. Owner purchases materials. W.P.A. funds allotted.

N. Y., Rome—City, constructing reservoir at Stokes, own forces. $116,218 allotted by W.P.A. J. Gawkins, city engr.

N. Y., Yonkers—City, constructing watermains in Austin Ave., Parkway Blvd. and Eaton Ave. $13,540; in Carye Ave. from Saratoga to McBean Aves., $16,008; in various streets and sections, $40,956. Grand total $70,504. Owner supervises work. **W.P.A.** Materials to be purchased. C. J. Sheridan, city engr.

O., Flushing—Village, waterworks, dug well, distributing system and pump equipment, to Shullo Constr. Co., 140 North Summit St., Akron, $45,171***1 m.g. elevated steel tank, c., to Chicago Bridge & Iron Wks., Neville Island, Pittsburgh, Pa., $9,555. **P.W.A.** Bids Oct. 7, Noted Oct. 21, C. D.

O., Jeromesville—Village, waterworks system, incl. laying watermains, installing fire hydrants, meters, drilling 1 new well, constructing 75,000 gal. reservoir, to P. E. Bickel, General Delivery, Newark, $25,775; Villagers approved $12,000 bond issue. **P.W.A.** Noted July 22, C. D.—July 25, E. N.-R.

Pa., Smithfield—Borough, H. B. Jackson, secy., waterworks system, 20,000 lin. ft. 4- to 8-in. c.i. water pipe, fire hydrants and valves, to C. D. C. Chicchis & D. J. Alli, Clairton, $34,806. **P.W.A.** Bids Oct. 7. Noted Oct. 17, C.D. —Oct. 3, E.N.-R.

Tex., Ropesville—Ropesville Industrial Gardens, Inc., drilling 34 water wells and providing a cypress water tank and wooden tower for each well, to E. K. Hufstedler & Son, Lubbock and Ropesville, about $80,000.

Tex., San Antonio—See "Sewerage and Waste Disposal."

Wis., Milwaukee—Dpt. P. Wks., 120,000 cu. ft. filling for water purification plant, to

Waterworks (Continued)

Marchese Bros., 1133 South 3rd St., 53.5c. per cu.yd. P.W.A. Bids Oct. 22. Noted Oct. 14, C.D.—Oct. 17, E. N.-R.

Man., Wasagaming—Dpt. Interior, Winnipeg, constructing 20,000 gal. water tank, to Vulcan Iron Wks., Winnipeg, $6,500***water pipe and fittings, to Power & Mine Supply Co. Ltd., Winnipeg, $11,131***electrical material, to Canadian General Electric Ltd., Calgary, Alta., $5,737. Grand total $23,368.

Ont., Trenton—Town, E. Ellis, chn., laying about 1 mi. watermain to Trenton Air Station to supply water to airport, day labor. Town in market for pipe. Noted June 21, C. D.—June 28, E. N.-R.

SEWERAGE AND WASTE DISPOSAL

PROPOSED WORK

Ala., Irondale—City soon takes bids brick and pipe storm sewers, 15- to 51-in., manholes, connection, etc. $32,727. P.W.A. project. J. W. Goodwin, 3021 6th Ave., S., Birmingham, consult. engr. Noted July 24, C.D.—Aug. 1, E.N.-R.

Calif., San Gabriel—City, election Nov. 18, $250,000 bonds to assist in finance construction outfall sanitary sewer and sewage collection system. $450,000. C. N. Wright, Pacific Electric Bldg., Los Angeles, engrs. Balance to be obtained from P.W.A. Noted July 5, C. D.—July 11, E. N.-R.

Conn., New Milford—Town, preliminary plans sewerage system., incl. disposal plant. $318,000. P.W.A. grant $143,100. T. F. Bowe, 110 Williams St., New York, engr.

Ill., Charleston—City plans sewerage system. W.P.A. project. Russell & Axon, Delmar and Euclid Aves., St. Louis, Mo., engrs. Plans received by State Dpt. Health for approval.

Ill., Danville—City preliminary plans completed constructing sewage disposal plant, incl. sludge dry beds, screen house, pump house, blower house and administration building, twin grit basins, air diffusion aeration tanks, sewer control chambers and meter vault, and storm sewers in Park and Fairchild Sts. $350,909. $157,909 P.W.A. funds allotted. Greeley & Hansen, 6 North Michigan Ave., Chicago, engrs. Noted Jan. 28, C.D.—Jan. 31, E.N.-R.

Ill., Evansville—City plans sewerage system. P.W.A. project. J. G. Cooney, Belleville, engr. Plans received by State Dpt. Pub. Health for approval.

Ill., Granville—City plans sewerage system. H. A. Tolburg, Ottawa, engr. P.W.A. project. Plans received by State Dpt. Health for approval.

Ill., Hoyleton—City plans sewerage system. McCaslin & Co., Nokomis, engrs. P.W.A. project. Plans received by State Dpt. Health for approval.

Ill., Oak Forest—Dpt. P. Wks. & Buildings. Div. Hys., Springfield, plans sewerage for Cook County institutions at Oak Forest. Plans received by State Dpt. Health for approval.

Ill., Montgomery—Aurora Sanitary Dist. making plans constructing addition and alteration to present disposal plant on West River Rd., incl. 1 story building, installing secondary settling tanks and gas engine. $58,350. P.W.A. funds granted. W. E. Deucher, 63 North LaSalle St., Aurora, engr.

Ill., Springfield—City plans enlarging and improving sewerage system in district from Holmes Ave. and Laurel St., east and south to 4th St. and Cornell Ave. $130,000. Applied for 45% grant from P.W.A. M. P. O'Brien, city engr.

La., Jackson—City plans sewerage system and disposal works. Government $120,952, city $41,340. W.P.A. approved by President. F. P. Joseph, Glenmora, engr.

La., New Orleans—See "Earthwork, Irrigation, Drainage and Waterways."

La., Ville Platte—City plans sewerage system and disposal plant. Government $53,884, city $17,101. W.P.A. approved by President. J. M. Fourmay, Hammond, engr. Noted Dec. 4, 1933, C. D.—Aug. 3, 1933, E. N.-R.

Mass., Marblehead—Town, Sewer Dpt., Town Hall, making plans extending sewer lines in various streets. $55,000. F. A. Barbour, 1119 Tremont Bldg., Boston, engr. P.W.A. allotted $24,750 grant. Noted Apr. 17, C. D.—Apr. 25, E. N.-R.

Mass., Methuen—Town making plans sanitary sewer extensions. $45,000. P.W.A. project. $22,725 grant.

Mass., Somerville—City, J. A. Hagan, street comr., City Hall, making plans vitr. clay sewer lines throughout city. $58,000. P.W.A. grant $21,600.

Mass., Woburn—City, E. S. Kenney, mayor, making plans extending sewage lines. $36,000. P.W.A. grant $16,200.

Minn., Buffalo—Village, E. L. Thomesen, recdr., plans completed sewage disposal plant. $85,000. P.W.A. funds applied for. Banister Eng. Co., 556 North Prior Ave., St. Paul, engrs.

Minn., Clinton—Village plans sanitary sewerage system. $36,000. $16,110 allotted by P.W.A. E. C. Gustafson, village clk.

Mo., Oak Grove—City election Nov. 5, on $40,000 bonds to construct sewerage system. Black & Veatch, 4706 Bway., Kansas City, engrs. Noted May 10, 1934, C. D.—May 17, 1934, E. N.-R.

Neb., Ogallala—City plans sewerage system. $40,000. P.W.A. funds allotted. Group Eng. Co., Merchants Bank Bldg., Omaha, engrs.

Neb., Seward—City plans sewage disposal plant. $36,363. P.W.A. funds allotted. H. A. Davis, Crete, engr.

N. J., Cranbury—Cranbury Twp. plans constructing complete sanitary sewerage system, incl. sanitary sewers and sewage treatment plant. $85,980. P.W.A. application. W. H. Baker, 46 Paterson St., New Brunswick, engr.

N. J., Long Branch—City plans intercepting sewer, pumping station and force main to connect present disposal plant with disposal and treatment plant of the Long Branch Sewer Co. $264,493. P.W.A. application. O. W. Morris, 184 Bway., city engr. Noted Dec. 28, 1933, C.D.—Jan. 4, 1933, E. N.-R.

N. J., Rahway—City plans system of intercepting sewers and appurtenances, sewage pumping station, certain lateral sewers and storm drains. $391,500. P.W.A. application. Alexander Potter, 50 Church St., New York, N. Y., engr.

N. J., Raritan—Town plans sewage treatment plant combined with municipal garbage incinerator. $226,000. E. F. Adams, 24 Doughty St., town engr. P.W.A. application.

N. J., Sayreville—Boro plans sewage treatment plant, pumping station and intercepting sewer. $188,000. P.W.A. application. Remington & Goff, 509 Cooper St., Camden, engr. Noted May 16, C.D.—May 23, E. N.-R.

N. J., South River—Boro Council plans sewage disposal works. $166,387. P.W.A. application. L. P. Booz, 263 Madison Ave., Perth Amboy, engr. Noted Mar. C. D.—Mar. 23, E. N.-R.

N. J., Sterling—Passaic Twp. bids in November constructing sewage disposal plant. P.W.A. funds allotted. C. C. Vermeule, 38 Park Row, New York, engr. Noted Sept. 16, C.D.—Sept. 19, E.N.-R.

N. J., Union Beach—Town, plans sewers, pump station and sewage treatment plant. $295,990. P.W.A. application. L. P. Booz, 263 Madison Ave., Perth Amboy, engr.

N. J., Westwood—Boro plans extensions to sewage treatment works involving 1 chemical mixing tank, 2 flocculation tanks, 2 mechanically equipped settling tanks and control building to serve sewage flow of 600,000 g.p.d. $25,000. P.W.A. application. J. G. Albertson, 110 Williams St., New York, N. Y., engr.

N. J., Woodbridge—Woodbridge Twp. plans sewage treatment plant with trunk lines, intercepting present settling tanks. $311,761. P.W.A. application. C. R. Davis, Town Hall, twp. engr.

N. Y., Albany—City making plans, reconstructing and relocating Beaver Creek Sewer. $160,000. Applied for P.W.A. funds. J. J. McManus, city engr.

N. Y., Ballston Spa—Village bids in November, sewage disposal plant. $81,818. P.W.A. project. Solomon & Keis, 257 Bway., Troy, engrs. Noted Aug. 7, C. D.—Aug. 15, E. N.-R.

N. Y., Beacon City—City plans sewage disposal plant. $147,257. Applied for P.W.A. funds. Barker & Wheeler, 36 State St., Albany, engrs. Noted Aug. 20, C.D.—Aug. 23, E.N.-R., under "Contracts Awarded."

N. Y., Dickinson—Town, c/o R. M. Page, 239 Main St., Johnson City, plans sewerage system. $60,000. P.W.A. funds applied for. Nussbaumer & Clarke, 327 Franklin St., Buffalo, engrs. Noted Sept. 26, C.D.—Oct. 3, E.N.-R., under "Contracts Awarded."

N. Y., Elmira—Dpt. Correction, State Office Bldg., Albany, plans constructing sewers at Elmira State Reformatory. $200,000. T. F. Farrell, Albany, state engr.

N. Y., Geneva—City soon takes bids sewage disposal plant, in King Valley near New York Central R.R. tracks. $27,000. P.W.A. funds allotted. J. W. Brennan, city engr.

N. Y., Gloversville—City plans sanitary sewers. $40,243 allotted by W.P.A.

N. Y., Newfane—Village survey completed for sewage plant and sewers. $146,231. $65,803 allotted by P.W.A. Industrial Planning Corp., 271 Delaware Ave., Buffalo, engrs. Noted Aug. 16, C.D.—Aug. 22, E.N.-R.

N. Y., Plattsburg—City making plans sewers and sewage disposal plant. $153,000. P.W.A. funds applied for. LeRoy Brown, city engr.

N. D., Steele—City, D. Haines, aud., plans sanitary sewerage system. $35,000. P.W.A. funds applied for. P. M. Barnes, Valley City, engr.

O., Geneva — Village making plans sewage treatment plant and sewer lines. $80,000. P.W.A. funds allotted. R. N. Case, Town Hall, city engr.

★ **O., Hamilton**—City Council approved following for W.P.A. projects, now awaiting federal approval, sanitary sewers $198,877; storm sewers $290,499; sidewalks, curbing and gutter-

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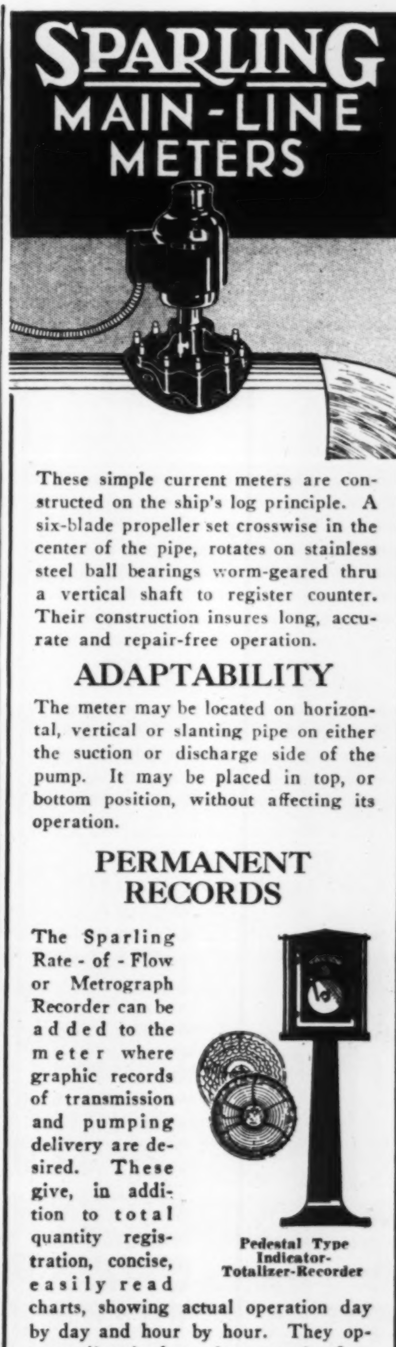
†Federal Government.



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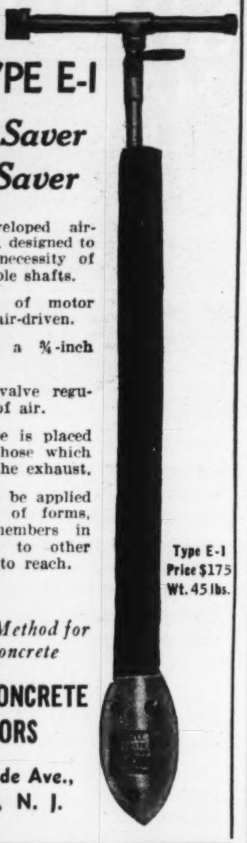

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Sewerage, etc. (Continued)

ing $810,674; streets $600,000. W. A. Smalley, city engr.

Okla., Alma—City making final plans constructing sewerage and water systems, $60,000. W. R. Holway, 302 East 18th St., Tulsa, engr.

Okla., Chickasha—City plans sanitary main sewers for north addition of city. $33,000. Bond election Oct. 18. P.W.A. project. R. O. Bradley, Chickasha, engr.

Okla., Oklahoma City—City made preliminary plans constructing sanitary main sewers for Walnut Grove addition to Oklahoma City. $21,000. L. M. Bush, city engr.

Okla., Tulsa—City defeated $900,000 bonds for sewage disposal plant. Black & Veatch, 4706 Bway., Kansas City, Mo., engrs.

Pa., Ambridge—Boro plans storm sewer. $194,545. Approved by P.W.A. R. A. Nadian, City Bldg., engr. Noted Aug. 30, C.D.—Sept. 5, E.N.-R.

Pa., Dormont—Boro plans storm sewer. $78,182. Approved by P.W.A. Vegexler-Ramsey & Co., Bowman Bldg., Pittsburgh, engrs.

Pa., East Conemaugh—East Conemaugh Bros. plans sewerage system, $96,364. Approved by P.W.A. A. P. Thomas, 502 Main St., Johnstown, engr.

Pa., Jeannette—City plans sewers. $205,455. Approved by P.W.A. R. H. Craig, 222 North 3rd St., Harrisburg, engr.

Pa., Kittanning—Kittanning Boro plans sewerage system. $36,311. Approved by P.W.A. W. G. Aye, Kittanning, engr.

Tenn., Camden—City plans installing sewerage system. $45,455. Will apply for P.W.A. funds. Freeland & Roberts, Independent Life Bldg., Nashville, engrs.

Tenn., Coal Creek—City plans sanitary sewers, $56,363. P.W.A. Docket 4131. Campbell Wallace, 626 Market St., Knoxville, engr. Noted Nov. 1, 1933, C. D.—Nov. 9, 1933, E. N.-R.

Tex., Hedley—City, E. L. Thompson, mayor, plans sanitary sewers, collecting lines and probably septic tank. W. D. Howren, 110 West 5th St., Amarillo, engr. P.W.A. allotted loan and grant. Noted Aug. 18, 1933, C.D.—Aug. 24, 1933, E.N.-R.

Tex., Stratford—City, A. Ross, mayor, ordered new plans prepared sanitary sewers. $28,000. W. D. Howren, 110 West 5th St., Amarillo, engr. Noted Oct. 8, 1934, C. D.—Oct. 11, 1934, E. N.-R.

Tex., Vernon—City, W. D. Hockersmith, mayor, making plans 6 mi. storm sewer lines. $142,000. P.W.A. project. J. E. Ward, Harvey-Snder Bldg., Wichita Falls, engr.

Wash., Elma—City making plans sewerage system. $50,000. P.W.A. funds allowed. O. L. Soule, water supt.

Wash., Selah—Town plans bond election soon for constructing sewerage system and disposal plant. $60,000. P.W.A. approved grant of $27,000. G. D. Hall, Court House, Yakima, engr.

B. C., Vancouver—Municipality making plans sewers. $175,000. C. Brackenridge, city engr.

N. S., Picton—Municipality to submit by-law to rate payers for constructing sewerage scheme. $52,000.

Que., Sillery—City plans sewer and waterworks, $41,500 approved and $26,000 defeated for fire protection.

BIDS ASKED

Ark., Fordyce—Nov. 7, by City, G. W. Smith, mayor, at State Capitol Bldg., Little Rock, complete sewerage system. $29,091. W. F. Moody & Co., National Standard Bldg., Little Rock, engrs.

Ark., Rison—Nov. 6, by City, G. H. Holmes, mayor at State Capitol Bldg., Little Rock, complete sewerage system. $32,727. P.W.A. project. H. Carter, National Standard Bldg., Little Rock, engr.

Ill., Maywood—See "Contracts Awarded."

Mo., Platte City—See "Contracts Awarded."

Mo., Pilot Grove—Nov. 5, by City Clerk, sanitary sewers, sewage disposal plant, equipment, auxiliary piping and appurtenances. $36,000. W. B. Rollins & Co., 339 Railway Exch. Bldg., Kansas City, engrs. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. J., New Brunswick—Nov. 12, by City Comn., sewage disposal plant, on Burnet St. $600,000. P.W.A. granted $263,045. A. Atkinson, New Brunswick, engr.

N. Y., Amsterdam—See "Contracts Awarded."

N. Y., Belden Center—See "Contracts Awarded."

N. Y., Buffalo—See "Contracts Awarded."

★ **N. Y., Elmira**—Nov. 25, by City, F. Sullivan, mgr., sewerage disposal plant. $900,000. P.W.A. project. C. C. Hunter, city engr. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. Y., Endicott—Village taking bids constructing storm and sanitary sewers. $52,000. P.W.A. project. C. F. Hunt, city engr. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

N. Y., Glens Falls—See "Contracts Awarded."

N. Y., Lake George — See "Contracts Awarded."

N. Y., Lowville—See "Contracts Awarded."

N. Y., Mamaroneck—See "Contracts Awarded."

N. Y., New Rochelle—City, City Hall, constructing incinerator addition, own forces, [illegible] 869. W.P.A. funds allotted.

N. Y., Pittsford—See "Contracts Awarded."

N. Y., Poughkeepsie — See "Contracts Awarded."

N. Y., Watervliet—See "Contracts Awarded."

N. Y., Webster—See "Contracts Awarded."

Tex., San Antonio—See "Contracts Awarded."

Tex., Temple—City bids about Nov. 10, 6 to 12-in. vitr. clay sewer lines. $24,750 P.W.A. Bd. approved loan and grant. J. Rady, 400 Majestic Bldg., Fort Worth, and Temple, engr. Noted Sept. 12, C. D.—Sept. 19, E. N.-R.

CONTRACTS AWARDED

Ark., Judsonia—Mayor, at State Capitol Bldg., Little Rock, complete sewerage system, to L. O. Brayton & Co., Dyersburg, Tenn., $23,189. Est. $26,363. **P.W.A.** Bids Oct. 21, awarded Oct. 21.

Conn., Stamford—City, laying 2,570 ft. storm sewers in various streets, Glenbrook Rd., also Glenbrook Sect. $49,205. Owner builds. **W.P.A.**

Ill., Maywood—Village constructing relief sewerage system, involving 150,000 lin.ft. 8 to 60-in. concrete and tile pipe, **W.P.A.** labor. Will purchase $200,000 material soon. P.W.A. project. Consoer, Townsend & Quinlan, Inc., 205 West Wacker Dr., Chicago, engrs.

Kan., Moline—City, sewers and sewage disposal plant, to W. B. Carter, W. K. H. Bldg., Wichita, $71,248. F. E. Devlin, W. K. H. Bldg., Wichita, engr.

Md., Annapolis—City, constructing pumping station and syphon headworks building, to Marrocco Constr. Co., 231 South Exeter St., Baltimore, $67,823. **P.W.A.**

★ **Mass., Woburn**—Commonwealth of Massachusetts, F. D. Smith, ch. engr. Sewage Div. Metropolitan Dist. Comn., 20 Somerset St., Boston, Aberjona Valley sewer line construction in North Metropolitan Dist., soil test borings only, to Chas. A. Leary Co., 44 School St., Boston. Total est. $3,000,000. P.W.A. grant $1,350,000. Final plans still in progress.

Mass., Tisbury—Town, storm sewers and street improvements. $50,000. Owner builds. **P.W.A.** approved $22,725 grant.

Mo., Platte City—City will construct sewers, relief labor. $25,000. W.P.A. approved project. Work to start at once. Noted Oct. 15, C. D.—Oct. 17, E. N.-R.

N. J., Elizabeth—Joint Meeting Municipalities of East Orange, Hillside Twp., etc., constructing supplementary joint trunk sewer for new sewage treatment sludge disposal plant, to J. L. Boyle Eng. & Constr. Co., 437 Riverside Ave., Newark, $164,857. Noted Oct. 11, C. D.—Oct. 17, E. N.-R.

N. J., Woodbridge—Rahway Valley Joint Meeting, Elm St., pumping equipment for sewage disposal plant, to R. B. Carter Co., 53 Park Pl., New York, N. Y., $14,250. Bids Sept. 28. **(Correction**—name of contractor). Noted Oct. 16, C. D.—Oct. 24, E. N.-R., under "Contracts Awarded."

N. Y., Amsterdam—City, constructing storm sewer in Sloane Ave., incl. manholes and catch basins, relief labor. $25,000. $21,558 allotted by W.P.A.. Owner supervises work. **W.P.A.**

N. Y., Belden Center—Village, sanitary sewerage system. To exceed $25,000. Owner builds with relief roll labor. **W.P.A.** $22,885 allotted by W.P.A. All materials to be purchased.

N. Y., Buffalo—City reconstructing and extending storm water drainage sewer in Sycamore St. $202,770, and in Woltz Ave. $103,050, own forces. G. Summers, supt. P. Wks. W.P.A. funds allotted.

N. Y., Buffalo—Dpt. P. Wks., City Hall, reconstructing and extending storm water sewers in Elmwood Ave., own forces. $99,900. W.P.A. funds allotted. C. J. Summers, comr.

N. Y., Buffalo—City, constructing storm sewer in Theodore St., own forces. $48,016. W.P.A. funds allotted. C. J. Summers, comr. P. Wks.

N. Y., Glens Falls—City constructing rein.-con. storm sewers, own forces. $27,176. W.P.A. funds allotted.

N. Y., Lake George—Village, constructing sanitary sewerage system, own forces, using labor from relief rolls. $160,000. W.P.A. funds allotted. Noted Aug. 1, C. D.—Aug. 8, E. N.-R.

N. Y., Lowville—Village, constructing sewers in Water Terrace, State, West State and Clinton Sts., $17,510; in Reed Terrace, Park Pl., Dayan, Collins, Clinton, Water and State Sts., $17,306, relief labor. W.P.A. funds allotted.

N. Y., Mamaroneck—Municipality, constructing 830 ft, 12- to 24-in. storm drain from Bradford to Ralph Aves., $2,600; improving sewerage system $14,000; sanitary and storm sewers, $12,300; curbing and guttering Old White Plains Rd., $3,777; improving roads, $3,100; street improvements, $7,922, by day labor. Grand total $43,699.

†*Federal Government*

Sewerage, etc. (Continued)

N. Y., New Rochelle—City, City Hall, constructing incinerator addition, own forces. $25,869. W.P.A. funds allotted.

N. Y., Pittsford—Village constructing sewer improvements and additions, own forces. $68,362. W.P.A. funds allotted.

N. Y., Poughkeepsie—City, constructing sanitary sewers, own forces. $131,009. W.P.A. funds allotted.

N. Y., Watervliet—City, constructing storm sewers, own forces. $29,000. Owner purchases materials. W.P.A. funds allotted.

N. Y., Webster—Village, constructing sanitary sewers, own forces. $53,178. W.P.A. funds allotted. Noted May 21, 1934, C. D.—May 24, 1934, E. N.-R.

Tex., San Antonio—City, C. K. Quin, mayor, 3,800 lin.ft. 18 in. concrete storm sewers and 3,500 ft. 8 in. watermains, relief labor. $43,226. Federal W.P.A. grant approved by President Roosevelt. I. Ewig, city engr. Noted Aug. 30, C. D.—Sept. 5, E. N.-R.

Va., Richmond—Dpt. P. Wks., constructing Marshall St. combination sewers, to C. M. Weinbrunn, 2806 Idlewood Ave., $6,516; Fairfield Ave. combination sewers, to Van Doren Co., 2911 Hawthorne Ave., Richmond, $46,506***Laburnum Ave. storm sewer, to W. J. McLane, Richmond, $46,000***Douglasdale Road sewer, to J. P. McGuire Constr. Co., Durham, N. C., $20,000. Grand total $119,022. **P.W.A.** Bids Oct. 17. Noted Oct. 15, C. D.

Wis., Adams—City, deep well pump, to Aurora Pump Co., Aurora, Ill., $945***electric control panel, to Staub's Electric Shop, Wisconsin Rapids, $1,359***sewage treatment plant, to C. R. Mejers & Sons Co., Oshkosh, $18,815. Grand total $21,119. Bids Oct. 3. **P.W.A.** Noted Oct. 11, C. D.—Sept. 26, E. N.-R.

Wis., Shorewood—Village, constructing sanitary sewers, relief labor. $30,645. W.P.A. funds allotted. H. A. Schmitt, Shorewood, engr. Noted Oct. 2, 1933, C. D.—Oct. 12, 1933, E. N.-R.

Man., Winnipeg—Greater Winnipeg Sanitary Dist. Bd., constructing 30 in. monolithic sewers in Palson Ave., to Dominion Constr. Co. Ltd., $45,002***in Selkirk Ave., to H. Borger, $18,532***vitr. clay sewer in Hart Ave., to J. L. Toddy, Winnipeg, $4,560. Grand total $68,094.

BRIDGES AND GRADE CROSSINGS

PROPOSED WORK

Conn., Bridgeport—City making plans replacing wooden bridge on Island Brook Ave. with rein.-con. structure. $26,512. F. Toquet, City Hall, engr. W.P.A. allotted funds.

Ill., Chicago—Chicago & Northern R. R. Co., C. T. Dike, ch. engr., 400 Madison St., preliminary plans constructing 5 track truss span bridge Logan Blvd. and Western Ave.

Iowa—State Hy. Comn., Ames, soon takes bids constructing multiple span overhead crossing structure, 1 rein.-con. pipe culvert, 1 corrugated metal pipe culvert, incl. 365 cu.yd. Class 1 excav. and 600 cu.yd. fill; multiple span overhead crossing structure, over C. M. St. P. & O. Ry., Primary Rd. 33, on North corporation limits of Alton, Sioux Co.; raising and extending old abutments and constructing 60x24 ft. I-beam superstructure, incl. 100 cu.yd. excav. F. R. White, ch. engr.

La., Shreveport—Caddo Parish plans pile trestle near Greenwood. Government $17,504, parisn $6,682. J. T. Bullen, Shreveport, parish engr. W.P.A. approved by President.

Mass., Easthampton—Town, Bd. Selectmen, Town Hall, making plans rein.-con. bridges. $45,000. W.P.A. project. Grant allocated $20,700, for town bridge work D-1234.

Mass., Lawrence—City, Mayor's Office, City Hall, plans removing 2 bridges, Daisy St. over Spicket River and building new rein.-con. bridge, $50,000. P.W.A. allocated $22,100 for same.

Minn., Brainerd—State Hy. Dpt., St. Paul and Northern Pacific Ry. Co., B. Blum, ch. engr., St. Paul, plan rein.-con. steel underpass, at 13th St. and railroad tracks. $92,700.

Mont., Whitefish — State Hy. Dpt., Helena, plans steel, concrete overpass, over Great Northern Ry. tracks, Flathead Co. $75,000.

†Nebraska and Iowa—T. H. McDonald of Pub. Rds., Washington, D. C., rejected applicatin of Governors of Iowa and Nebraska to use money appropriated by U. S. Government for state highways for constructing free bridge over Missouri River at Dodge St. because it would cause loss of tolls on new bridge almost completed at L St., South Omaha. $1,000,000. Application will be taken to U. S. Government for grant.

Neb., Lincoln—Deul Co. plans bridge. $42,000. P.W.A. funds allotted. A. T. Lobell, Lincoln state engr.

N. Y., Babylon—Long Island R. R. Co., A. C. Watson, Pennsylvania R. R. Sta., plans elimination Deer Park and Half Hollow Rd. crossings, here. $182,200 Pub. Service Comn. approved plans and estimate of cost.

N. Y., Binghamton—Dpt. P. Wks., City Hall, authorized A. B. Cohen, 1 Madison Ave., New York, to draft plans and specifications for Ferry St. Bridge over Chenango River. Bids about Nov. 4, excavation and constructing temporary bridge. Noted Aug. 7, C. D.—Aug. 15, E. N.-R.

N. Y., Binghamton—Erie R. R. Co., G. S Fanning, ch. engr., Midland Bldg., Cleveland, O., and Delaware Lackawanna & Western R. R. M. H. Doughty, ch. engr., Hoboken, N. J., plan eliminating grade crossing at Ferry St. Bridge. $180,000.

N. Y., Brookhaven—Long Island R. R. Co., A. C. Watson, ch. engr., Pennsylvania R. R. Sta., New York, plans eliminating Medford Road Crossing. $150,800. Pub. Service Comn. approved plans and estimate of cost.

N. Y., Johnson City—Village, Village Hall, plans bridge across Susquehanna River. Engineer not appointed.

N. Y., Johnstown—Dpt. P. Wks. made plans 2 bridges on Townsend Ave. and Briggs St. $83,000. Applied for P.W.A. funds. C. W. Knowles, city engr.

N. D., Casselton—State Hy. Comn., W. J. Flannigan, comr., Bismarck, plans concrete overpass, over Great Northern Ry. Co. tracks, near here. $85,000.

N. D., Minot—State Hy. Dpt., W. J. Flannigan, comr., Bismarck, plans concrete overpass. $188,000.

O., Akron — Municipality and Summit Co., plans steel, concrete bridge, South Main St. To exceed $100,000. Engineer not appointed.

O., Defiance—Comrs. Defiance Co. approved $51,000 bond issue for county's share in cost of proposed new bridge over Auglaize River. $200,000. Engineering Hy. Dpt. of State, engrs.

Texas — State Hy. Comn., H. Hines, chn., Austin, plans approved constructing steel and concrete underpass, adjacent roadway and storm sewers, Hy. 4, NRM 561. Old P.W.A. project. G. G. Wickline, Austin, engr.

Texas—State Hy. Comn., H. Hines, chn., Austin, plans approved 0.567 mi. M.K. and T.R.R. overpass and approaches, Hy. 205, W.P.G.S. 836, near Rockwall, Rockwall Co.; 0.567 mi. St. Louis S.W.R. overpass and approaches on Hy. 31, W.P.G.H. 147-D. Smith Co. G. G. Wickline, Austin, bridge engr. New P.W.A. project.

Texas — State Hy. Comn., H. Hines, chn., Austin, soon takes bids constructing Colorado River Bridge and roadway approaches, Hy. 66, Control No. 252-2-4, Burnet Co. $200,000.

Tex., Port Isabel—City voted $220,000 bonds for constructing of vehicular causeway across Laguna Madre, linking Port Isabel with Padre Island, distance of 1½ mi. $400,000. P.W.A. Bd. allotted $180,000 grant in addition to above bonds voted. Address City, c/o G. Scanlan, mayor. Noted Oct. 9, C. D.—Oct. 17, E. N.-R.

Tex., Rockwell—State Hy. Comn., H. Hines, chn., Austin, preliminary plans constructing steel, concrete overpass and roadway approaches on 0.58 mi. south of Rockwell to 1.146 mi. south of Rockwell on Hy. 205, Contr. 451-1. $33,000. G. J. Treadway, Terrell, engr.

Tex., San Antonio—City, C. K. Quin, mayor, election Nov. 23, $50,000 bonds, constructing bridges, vehicle on by-pass routes. Total est. $800,000. It is necessary for city to vote on bond issue in order to obtain Federal funds. P.W.A. project.

Tex., San Antonio—City, C. K. Quin, mayor, plans rein.-con., steel railway underpass on Laredo Hy., $200,000, County to furnish right-of-way, and Fed. Government will supply funds, now available, no relief labor to be used; rein.-con., steel railway underpass, San Pedro Ave., under M. P. tracks. $200,000. City to furnish right-of-way, plan to advertise for bids and contruct by actual contract basis, and using any relief labor. I. Ewig, city engr. E. P. Arneson, Gunter Bldg., superv. archt. and engr. Actual work will have to start by December.

Tex., San Antonio—City, C. K. Quin, mayor, plans rein.-con. steel railway underpass, Roosevelt Ave., Strategic Railway, in heart of city. $200,000. I. Ewig, city engr. E. P. Arneson, Gunter Bldg., consult. engr.

Tex., San Antonio—Bexar Co., c/o Frost Woodhull, judge, plans vehicular underpass on Frio City Rd., outside city limits, under S.P. tracks near Kelly Field. $100,000. County to furnish right-of-way and Federal Government will supply building funds. W. S. Goodman, co. engr. E. P. Arneson, Gunter Bldg., superv. archt. and engr. Work to start by December.

Wash., Marietta—Whatcom Co., Bellingham plans 1 span 96 ft. pony truss bridge. $24,889. M. Campbell, Bellingham, acting engr.

Wash., Port Angeles—Town plans 2 creosoted timber bridges with concrete piers and decks, at Tunwater and Valley Gulch. $134,750. $55,000 bond issue, $26,150 state grant and $53,600 P.W.A. grant.

B. C., Vancouver—Municipality making plans constructing viaduct on 1st Ave. $150,000. C. Brackenridge, city engr.

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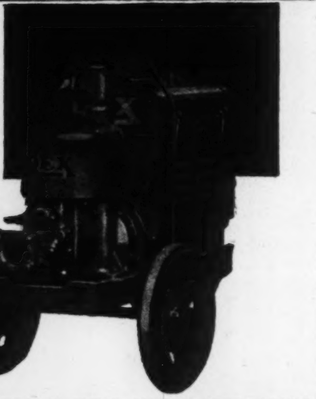

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Bridges, etc. (Continued)

Man., Winnipeg—G. F. Bentley, city clk., soon takes bids constructing subway under Canadian Pacific Ry. and Midland Ry. tracks on Portage Ave. W. $250,000. 70 per cent of cost will be paid by Ry. Comn. and balance by city. R. P. Brereton, Winnipeg, engr.

N. B., Fredericton—Dpt. P. Wks. making plans constructing bridges. $200,000.

BIDS ASKED

California—Nov. 13, by State Hy. Comn., Sacramento, rein.-con. girder overhead crossing over tracks of Atchison, Topeka & Santa Fe R. R., 3½ mi. north of Concord, consisting of one 32 ft. and two 29 ft. spans and 0.18 mi. roadway, grading, plant mixed medium curing type surfacing 0.18 mi. hy., Contra Costa Co. C. H. Purcell, P. Wks. Bldg., Sacramento, engr.

†Fla., Santes—Nov. 11, by U. S. Eng., Oscala, constructing highway bridge foundations.

Georgia—Nov. 8, by State Hy. Bd., Atlanta, 1 bridge, Sparta-Warrenton Rd., N.R.H. and M 138-A and Ext., Warren Co.; 2 bridges over King Creek and Brown Creek, on Gadsden, (Ala.) and Rome, (Ga.) Rd., F.A.P. 488-A, Floyd Co.; constructing 3 bridges on Ft. Valley-Roberta Rd., State Project 1036, Crawford Co.; steel trusses for Ocmulgee River Bridge, State Project 1522-B, Douglas-McRae Rd., Coffee and Telfair Counties.

Idaho—Nov. 8, by G. E. McKelvey, comr. P. Wks., Boise, constructing 126 ft. concrete viaduct over Oregon Short Line R.R., grading, surfacing 0.998 mi. approaches on Old Oregon Trail, Soda Springs, Caribou Co., incl. 74,000 cu.yd. unclassified excav., 140 cu.yd. structural excav. for culverts, 530 cu.yd. structural excav. for overhead.

Mo., Weldon Springs—Nov. 8, by State Hy. Dpt., Jefferson City, constructing 2,613 ft. overhall bridge over Missouri River. T. H. Cutler, Jefferson City, state hy. engr.

New York—Nov. 12, by Triborough Bridge Authority, 111 8th Ave., New York, constructing bulkhead wall along East River, from East 119th to East 124th St., Manhattan Connection of Triborough Bridge, connecting Mannattan, Bronx and Queens Boros, Contr. 41; adv. Oct. 31, E. N.-R.

New York—Nov. 19, by Dpt. P. Wks., Albany, two 40 ft. and one 55 ft. I-beam spans on Broome Co. line-Marathon-Hartford-Marathon Parts 1 and 2, ER-RC 3677, Cortland Co., $55,916; 75 ft. girder concrete approach span Oneida City Sconondoa St. and Oneida Veronona Rd., Madison and Oneida Counties; 18 ft. gravel-calcium chloride treated Knowlesville-Eagle Harbor, Orleans Co., constructing Bridge 19, Warren Rd., Culvert 24, Sinclair Rd., Bridge 30, Robinson Rd.; Culvert 31, Culver Creek Rd., Bridge 35, Kirkin Rd.; Culvert 38, Davenport Rd., and Culvert 39, Bonney Hill Rd., Steuben Co.; 21 ft. slab and 80 ft. girder bridge on Ithaca-Newfield Rd., Tompkins Co., $38,421; eliminating grade crossing, incl. 74 ft. rigid span on Hutchinson River Parkway extension, Westchester Co., $128,539; 60 ft. girder on Gilboa-Conesville Rd., Schoharie Co.

★ **N. Y., New York**—Nov. 22, by Transit Comn., 270 Madison Ave., constructing West 79th St. grade crossing elimination over New York Central R.R. tracks, at Riverside Dr. $1,800,000; adv. Oct. 31, E. N.-R.

†Pa., Phila.—Nov. 18, by U. S. Eng., Phila., constructing 3 highway bridges over Chesapeake and Delaware Canal.

South Carolina—Nov. 5, by State Hy. Dpt., Columbia, constructing 166 ft. rein.-con. bridge over A.C.L. R.R., near Bonneau, on U. S. Route 52, W.P.G.H. 218, Berkeley Co., involving 665 cu.yd. wet and dry excav., $20,600; 99 ft. rein.-con. bridge over S.A.L. R.R. on U. S. Route 76 in city of Columbia, W.P.G.M. 45-D, Richland Co., 800 cu.yd. wet and dry excav., $15,900; 196 ft. rein.-con. bridge over S.A.L. R.R. on U. S. Route 1, near Camden, W.P.G.H. 46, Kershaw Co., 320 cu.yd. wet and dry excav., $20,100; 156 ft. rein.-con. bridge over A.C.L. R.R. on U. S. Routes 17 and 33 at Hardeeville, W.P.G.H. 346-C and W.P.G.M. 346-C, Beaufort and Jasper Counties, 322 cu.yd. wet and dry excav., $18,400.

Washington—See "Streets and Roads."

Wisconsin—Nov. 12, by State Hy Comn., Madison, constructing Lomira Overhead Approaches, on Lomira-Campbellsville Rd., Dodge Co., incl. 76,725 cu.yd. common excav.; 699 ft. Lomira Overhead on Lomira-Campbellsport Rd., Hy. 67, W.P.G.M., 525-C, Dodge Co., incl. 2,790 cu.yd. excav.; rein.-con. box culverts, Milwaukee-Chicago Rd., Thompson-S.T.H. 20 Section and S.T.H. 20-South County Line Section, Racine Co., 1,355 cu.yd. excav.; constructing Bridge 49 and Culvert 122, Whitehall Ettrick Rd., Trempealeau Co., 560 cu.yd. common excav.

CONTRACTS AWARDED

Iowa—State Hy. Comn., Ames, 2 corrugated pipe culverts, 1 concrete pipe culvert, 26 concrete box culverts, in Cedar Co., to W. D. Phelan & Co., Davenport, $5,902***1 box culvert, and one 150x24 ft. I-beam bridge, Carroll Co., to F. E. Stooks, Ames, $13,889***one 60x[illegible] ft. I-beam bridge Jasper Co., to A. Olsen Constr. Co., Waterloo, $11,815***134x24 ft. cantilever I-beam overpass, 2 box culverts, 1 concrete pipe culvert, Sioux Co., to Jensen & Krage, Sioux City, $13,600***7 concrete pipe and 2 concrete box culverts, Van Buren Co., to J. J. [illegible], Prairie City, $3,582***2 concrete box and 150x 24 ft. I-beam span overpass, Van Buren Co., to V. L. Lundeen, Montezuma, $13,431. Grand total $62,219. Bids Oct. 15, awarded Oct. 18. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Kansas—State Hy. Comn. at office of County Clerk, Concordia, Bridge 10.3 addition, Project 40N-23-ERP 6, Clay Co., to R. G. Aldridge, 1609 Nebraska St., Kansas City, $31,9[illegible]***Bridge 0.6, Project 81-23-WPH 186 D, to [illegible] H. Hardman, Alton, $2,441***Bridge 1, Project 81-23-WPH 186-D, and Bridge 1.8, Project 81-23-WPH 186-D, to Rhoades Constr. Co., Newton, $4,412 and $4,416 respectively***Bridge 1.2 addition Project 81-23-ERP 4, to Gerard Knutson Constr. Co., 3520 Main St., Kansas City, Mo., $42,234, all foregoing in Cloud Co. Grand total $85,405. Bids Oct. 18. Noted Oct. 7, C. D., under "Streets and Roads."

Kansas—State Hy. Comn., at Oswego, two 14x14x50 ft., rein.-con. Bridge 3, Project 96-26 WPH 396-F, and two 14x16x80 ft., rein.-con. Bridge 3.6, Project 96-26 WPH 396-F, to A. L. Cook, Ottawa, $5,403 and $10,158 respectively, both in Greenwood Co.***160-200-160 ft. continuous truss and three 70 ft. I-beam span bridge, Project 166-15, P.W.A. 57, Labette Co., to Maxwell Constr. Co., Columbus, $109,543. Grand total $125,104. Bids Oct. 15. Noted Oct. 1, C. D.—Oct. 3, E. N.-R., under "Streets and Roads."

Kentucky—See "Streets and Roads."

Maine—State Hy. Comn., L. D. Barrows, ch. engr., Augusta, to H. Phillips, Portland, Newton Brook Bridge, P.W.A. 1014-3, 29 Dixfield, involving 292 cu. yd. concrete, $7,584; Scootarza Bridge over Scootarza Stream, Medford, 253 cu. yd. concrete, $10,893; Allen's Bridge over Allen's River, P.W.A. 1014-5, Falmouth, creosoted piles, timber, structural steel, $10,560. Grand total $29,037. **P.W.A.** Bids Oct. 8, awarded Oct. 17. Rejected bids Oct. 8, Dickey Brook Bridge, Twp. 17, Range 5, will readvertise. Noted Oct. 17, C. D.—Oct. 3, E. N.-R.

Mass., Millville—National Eng. & Contg. Co., general contractors, 10 State St., Boston, 100 tons structural steel for bridge, to Boston Bridge Wks., Inc., Cambridge, for Commonwealth of Massachusetts, Municipal Finance Comn., H. F. Long, chn., 10 Nashua St., Boston. Noted Oct. 11, C. D.—Oct. 17, E. N.-R., under "Contracts Awarded."

N. J., Newark—Central R.R. of New Jersey awarded contract bridge over Route 21, to Tuller Constr. Co., 95 Monmouth St., Red Bank, $82,238. State Hy. Dpt., Trenton, approved contract.

New York—Connell & Laub, general contractors, 51 Woodcrest Ave., Dayton, O., 150 tons structural steel for bridge in Otsego Co., to American Bridge Co., Frick Bldg., Pittsburgh, Pa., for Dpt. P. Wks., Albany. Noted Sept. 13, C. D.—Sept. 19, E. N.-R., under "Contracts Awarded."

New York—State Dpt. P. Wks., State Office Bldg., Albany, Culvert 20, Bridges 22, 23, 24 in Tompkins Co., to Bero Eng. Co., Inc., North Tonawanda, $22,029. Bids Oct. 15. Noted Sept. 20, C. D.—Oct. 3, E. N.-R.

New York—Staten Island Rapid Transit Railway Co., H. Lane, ch. engr., B. and O. Central Bldg., Baltimore, Md., 510 tons steel for grade crossing eliminations, in Tompkinsville and Stapleton, to McClintic Marshall Corp., Bethlehem, Pa., $30,498. Noted Oct. 16, C. D.—Oct. 24, E. N.-R., under "Contracts Awarded."

N. Y., Buffalo—Dpt. P. Wks., City Hall, constructing 3 span concrete bridge over Scajaquada Creek on Delaware Ave., own forces, reinforcing steel, to Hawkins Blvd., 243 Capen Blvd. TERA project. Owner will purchase materials. To exceed $17,500.

Oklahoma—State Hy. Dpt., Oklahoma City, constructing 46 ft. I-beam overpass over M.K. & T. Railway tracks at Choteau Mayes Co., to T. C. Ottinger, Hinton, $46,189 est. $50,000; 9 span 1,100 ft. truss I-beam bridge at Hulbert, Wagoner Co., to L. M. Mackey, Britton, $125,166 est. $135,000.

Pa., Kane—Kane Boro, McKeen Co. and State, constructing 3 span, plate girder hy. bridge with rein.-con. pavement, to Graham Constr. Co., Lancaster, $38,236. Est. $40,000.

Pa., Kane—Graham Constr. Co., general contractors, Lancaster, furnishing 185 tons structural steel for 3 span, plate girder hy. bridge, to McClintic-Marshall Corp., Bethlehem, for Borough, McKeen Co. and State. Noted Oct. 25, C. D.—Oct. 31, E. N.-R.

South Carolina—State Hy. Dpt., Columbia, 138 ft. rein.-con. overhead bridge over S.A.L. R.R. and approaches on Route 33 at Pritchardville, W.P.G.S. 402, Beaufort Co., to Wannamaker & Wells, Inc., Orangeburg, $34,688; 126 ft. rein.-con. overhead bridge over the C. and W.C. R.R. and approaches on Route 28, at Sheldon, W.P.G.H. 95, Beaufort Co., to C. Y. Thomason, Greenwood, $40,205. Bids Sept.

†*Federal Government.*

Bridges, etc. (Continued)

24. Noted Sept. 26, C. D., under "Streets and Roads."

Tennessee—State Hy. Dpt., Nashville, constructing bridge and approaches on State Hy. 9, over Pigeon River, Newport, N.R.M. 216-C, Parts 1 and 2 and N.R.H. 216-D, Cocke Co., and overhead and approaches over N. C. and St. L. R.R. on State Hy. 2, W.P.G.H. 269-I, Hamilton Co., to Hickman & Long, Harriman, $96,039 and $70,618 respectively. P.W.A. Bids Oct. 18, awarded Oct. 21. Noted Oct. 23, C. D. Oct. 10, E. N.-R., under "Streets and Roads."

Utah—State Rd., Comn., Salt Lake City, constructing grade separation structure and approaches, Salt Lake Co., to Christensen & Gardner, Interurban Bldg., Salt Lake City, $106,979. P.W.A. project. Bids Oct. 14. Noted Oct. 4, C. D.—Oct. 10, E. N.-R.

Washington — State Hy. Comn., Olympia, rein.-con. T-beam bridge, Skamania Co., to Colonial Constr. Co., West 326 1st Ave., Spokane, $9,891***256 ft. rein.-con. T-bridge Snohomish Co., to Wilder & Montfort, Blaine, $31,416***grading, surfacing, constructing 150 ft. steel truss with two 46 ft. rein.-con. T-beam approach spans, Jefferson Co., to Allen & Govan, Inc., Box 105, Olympia, $79,327. Grand total $120,634. Bids Oct. 15. Noted Sept. 30, C. D. —Oct. 3, E. N.-R.

Wisconsin—State Hy. Comn., Madison, 6 culverts in Juneau Co., to C. Stargardt, Athens, $18,814; 7 culverts in Juneau Co., to L. Schroeder, Cashton, $15,824. Bids Oct. 8. Noted Oct. 18, C. D.

Wis., Madison—Chicago, Milwaukee & St. Paul Ry., Chicago, Ill., R. J. Middleton, asst. ch. engr., awarded contract constructing subway, near here, to L. G. Arnold, Inc., Eau Claire, $51,366. Noted Sept. 24, C. D.—Sept. 26, E. N.-R.

Ont., Midland—T. T. Irving, Union Station, Toronto, Canadian Natl. Ry. and Dpt. Rys. & Canals, Ottawa, concrete, steel bridge, grading, concrete paving roadway, concrete abutments to carry railway tracks over Midland-Orillia Hy. at Martyr's Shrine, to A. E. Jupp Constr. Co., Ltd., 170 Berkeley St., Toronto, about $35,000. Noted Sept. 25, C. D.

STREETS AND ROADS

BIDS ASKED

Arizona—Nov. 8, by State Hy. Comn., Phoenix, grading, draining, aggregate base course surfacing 1.25 mi., Phoenix-Yuma Hy., F.A. 55 2nd Reop. A.F.E. 8040, Mohawk, incl., 16,700 cu.yd. roadway excav. T. S. O'Connell, state hy. engr.

California—Nov. 13, by State Hy. Comn., Sacramento, grading, concrete paving 11.2 mi. hy. between point 1 mi. north of Carquinez Bridge and Cordelia, Solano and Napa Counties. C. H. Purcell, P. Wks. Bldg., Sacramento, engr.

Georgia—Nov. 8, by State Hy. Bd., Atlanta, roadside beautification 4.262 mi. Atlanta-Newman Rd., NRM 174 AB and NRM 233, Fulton and Clayton Counties; paving 8.688 mi. Jackson-Monticello Rd., State Project 978 A and B, Jasper Co., incl. 5,000 cu.yd. earth excav.; 10.574 mi. Athens-Ebarton Rd., F.A.P. 483 C and E, Madison Co., 7,209 cu.yd. earth excav.; 5.378 mi. Chattsworth-Tenga Rd., F.A.P. 190-D, Murray Co., 23,034 cu.yd. earth excav.; 8.119 mi. Reidsville-Claxton Rd., Tatnall Co., F.A.P. 486-A, involving 5,594 cu.yd. earth excav.; 8.459 mi. Macon-Cochran Rd., NRH 505-D, Twigg Co., 3,924 cu.yd. earth excav.; 3.252 mi. Cordele-Abbeville Rd., F.A.P. 511-B, Crisp Co., 4,740 cu.yd. earth excav.; 3.743 mi. Blakely-Colquitt Rd., F.A.P. 264, Early Co., 1,785 cu.yd. earth excav.; 0.445 mi. Macon-Perry Rd., Bibb Co., N.R.M. 53-C, 1,202 cu.yd. earth excav.; 0.997 mi. Savannah-Columbia (S. C.) Rd., in city of Savannah, N.R.M. 42 A, Catham Co., 7,134 cu.yd. earth excav.; paving, 1 bridge 9.23 mi. Columbus-Macon Rd., F.A.P. 390 B and C, Crawford and Upson Counties; 1.296 mi. Georgetown-Cuthbert Rd., F.A.P. 199, Quitman Co., F.A.P. 199; grading 0.9 mi. Sparta-Warrenton Rd., NHR and M 138 and Ext., Warren Co., 16,879 cu.yd. earth excav.

Idaho—Nov. 8, by G. E. McKelvey, comr. P. Wks., Boise, grading, drainage structures 2.113 mi. Malad Valley Hy., from Summit north in Bannock and Oneida Counties, incl. 5,600 cu.yd. solid rock, 101,000 cu.yd. common and 400 cu.yd. structural excav.

Kentucky—State Hy. Comn., at office Frankfort, rejected bids Aug. 9, surfacing 6.154 mi. Garfield Vertrees Rd., S.P. 85-AS, Breckinridge Co., and 5.248 mi. same road, S.P. 85-BS, Hardin Co. Noted Sept. 5, C. D.—Sept. 12, E. N.-R.

Kentucky—State Hy. Comn., Frankfort, rejected bids Sept. 20, road improvements, Project. FA 367-ABS and FA 367-AB, Pendleton Co. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

Louisiana—Nov. 13, by State Hy. Comn., Baton Rouge, grading, gravel surfacing 7.5 mi. Angie East and Southeast Rds., Washington Parish; 10.5 mi. Routes 516, 517, 521, C-1349 and C-1361 roads in Vermillion Parish; 6.1 mi. Routes 1198, 493 and 1185, Iberia Parish; 6.043 mi. Route 627 between Hawkins Spur and Intersection with Route 208, Caldwell Parish; 6.248 mi. Bayou Barbara-Killian Rd., Livingston Parish; 8.803 mi. Plain Dealing-Rocky Mount Hy., Bossier Parish; 10.16 mi. Pittman-Leander Hy., Vernon Parish; 6.61 mi. Route 209, between intersections with Routes 64 and 690, Richland Parish; constructing 12 rein.-con. box culverts, on Shreveport-Texas State Line Hy., Caddo Parish, W.P.A. project.

Louisiana — Nov. 13, by State Hy. Comn., Baton Rouge, grading, gravel surfacing 8 mi. Calvin-Intersection Route 5, Rd. 5, Project 1019, Winn Parish; 4.17 mi. McCall-Intersection Route 208 Hy., Project 1016, Ascension Parish, $21,000; 3.708 mi. Declouet-Anse La Butte Hy., Project 838-B, St. Martin Parish, $18,000; 4.471 mi. Anse La Butte-Declouet Hy., Project 838-9, St. Martin and Lafayette Parishes, $22,000.

Michigan—Nov. 6, by State Hy. Comn., Lansing, widening 2.74 mi. existing gravel to 17 ft. and oil aggregate surfacing 2.74 mi. WPSO-38-42C-1 and WPMS-38-42C-2, Jackson Co.; grading, drainage structures, 2 course gravel surfacing 1.005 mi. WPSO-67-38C-1, Osceola Co.

Mo., St. Louis—Nov. 19, by Bd. P. Serv., City Hall, improving Skinker Rd. intersection of Olive St. Rd. and Hodiamont Ave. to point near Rosedale, $5,600; asphalt on concrete paving Kinker Rd., Rosedale Ave., northerly $11,810; rein.-con. paving Alabama Ave. from Marceau to Peeping, $40,700; sidewalks on Tholozan St. from Morganford to Kingshighway, Wren Ave. from Prange to Riverview Blvd., Plateau Ave. from McCausland St. to city limits, and Emma Ave. from Riverview to Mimika, $3,180. Total $61,820. L. A. Pettus, city engr.

New Hampshire—Nov. 7, by State Hy. Dpt., Concord, 4 in. on 5 in. gravel surfacing 1.82 mi. Cherry Valley Rd., Washington and Goshen, Sullivan Co., incl. 17,888 cu.yd. earth excav., $69,000. W.P.S.O. project; 900 ft. stone masonry seawall, 4,400 cu.yd. earth excav., North Hampton, Rockingham Co., $27,000.

New Jersey—Nov. 12, by State Hy. Dpt., Trenton, concrete paving 1.775 mi. Route 25, Sects. 16A, 17B, and 20A, from Neck Lane to Bayway Circle, Elizabeth, Union Co., incl. 2,074 cu.yd. unclassified excav. E. D. Sterner, comr.; adv. Oct. 31, E. N.-R.

N. J., Cranford—See "Contracts Awarded."

N. J., Paterson—See "Contracts Awarded."

New York—Nov. 19, by Dpt. P. Wks., Albany, improving 0.73 mi. Genoa-Locke Rd., Cayuga Co.; concrete paving 0.63 mi. Newport-Norway-Cold Brook Rd., S.H. 467, Project 410-B, Herkimer Co., $66,882; preliminary grading and structures on 1.11 mi. Shore Parkway Extension, WPMH Sh. P. 35-1, Kings Co., $136,332.

N. Y., New York — Nov. 7, by J. J. Lyons, pres. Bronx Boro, Bronx County Bldg., 161st St. and Grand Concourse, granite block paving Westchester Ave.; sheet asphalt on concrete paving Oak Point Ave.; grading, curbing, sidewalks, drains, culverts guard rails Wellman and Lafayette and Logan Aves.; adv. Oct. 31, E. N.-R.

N. Y., Falconer—See "Contracts Awarded."

N. Y., Gloversville—See "Contracts Awarded."

N. Y., Gloversville—City taking bids repaving Kingsboro Ave., $104,104. H. J. Hammer, city engr.

N. Y., Spencer—See "Contracts Awarded."

N. Y., Syracuse—See "Contracts Awarded."

N. Y., Utica—See "Contracts Awarded."

N. Y., Wellsville—See "Contracts Awarded."

N. Y., Yonkers—See "Contracts Awarded."

†North Carolina—Dec. 5, by Pub. Rds., Dpt. Agriculture, Shenandoah Life Insurance Bldg., Roanoke, Va., improving 13.12 mi. Shenandoah-Great Smoky Mountains Parkway from Route 18 to Horse Gap, Alleghany, Ashe and Wilkes Counties, incl. 600,000 cu.yd. excav. H. J. Spelman, Roanoke, dist. engr.; adv. Oct. 31, E. N.-R.

Pennsylvania—Nov. 8, at office W. Van Dyke, secy. Hys., Harrisburg, rein.-con. paving, 2 rein.-con. structures, rein.-con. beam bridge, bituminous on crushed aggregate surfacing 15,917 ft. R-55, Sects. R-4 and R-6, Snyder, Tyrone, and Warriors Mark Twps., Birmingham Boro, Blair and Huntingdon Counties, incl. 173,601 cu.yd. Class 1, 1,843 cu.yd. Class 2, 500 cu.yd. borrow excav.; rein.-con. paving, 2 rein.-con. structures, bituminous on crushed aggregate paving 19,096 ft. R-50, Sect. 4, Wharton Twp., Fayette Co., 95,219 cu.yd. Class 1, 3,383 cu.yd. Class 2, and 168 cu.yd. borrow excav.; dual type paving, consisting of two 10 ft. outside lanes of rein.-con. and a 10 ft. center lane of bituminous on crushed aggregate base, bituminous on crushed aggregate base for road approach 12,000 ft. R-35, Sect. 1, Southampton Twp., Franklin Co, 24,618 cuyd. Class 1, 883 cu.yd. Class 2, and 23,387 cu.yd. borrow excav.; dual type paving consisting of two 10 ft. outside lanes of rein.-con. and 10 ft. center lane of bituminous on concrete pavement, etc., 27,003 ft. R-10, Sect. 3, New Milford and Great Bend Twps., New Milford and Hallstead Boroughs, Susquehanna Co., 198,763 cu.yd. Class 1, 3,818 cu.yd. Class 2 and 14,101 cu.yd. borrow excav.; rein.-con bridge, rein.-con paving, grading and drainage 1,200 ft. R-196, Sect. 3, Richmond Twp., Tioga Co., 927 cu.yd. Class 1, 603 cu.yd. Class 2 and 245 cu.yd. borrow excav.; dual type pavement, consisting of two 10 ft. outside rein.-con. paved lanes, etc., 7,774 ft. R-108, Sect. 9,

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†*Federal Government.*

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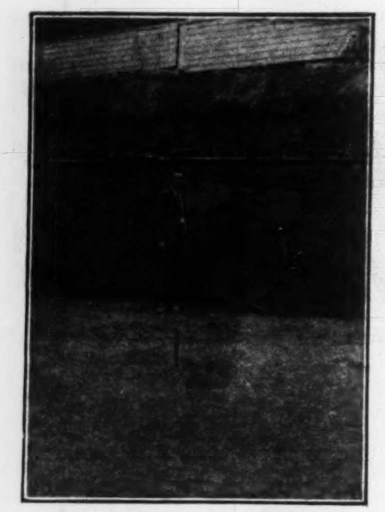

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Streets and Roads (Continued)

South Strabane Twp., city of Washington, Washington Co., 30,700 cu.yd. Class 1 and 825 cu.yd. Class 2 excav.

South Carolina—Nov. 5, by State Hy. Dpt., Columbia, concrete paving 0.308 mi. U. S. Route 1, approaches to bridge over S.A.L.R.R. near Camden, W.P.G.H. 46, Kershaw Co., involving 61,434 cu.yd. common excav., $35,000; 0.616 mi. U. S. Route 52, approaches to bridge over A.C.L.R.R. near Bonneau, W.P.G.H. 218 and Ext. and State Project 218, Ext., Berkeley Co., 61,962 cu.yd. common excav., $40,600; bituminous surfacing 0.623 mi. U. S. Routes 17 and 33, W.P.G.H. 346-C, W.P.G.M. 346-C and State Project 346-C, Beaufort and Jasper Counties, 70,842 cu.yd. common excav., $44,800.

Tennessee—State Dpt. Hys. & P. Wks., rejected bids Oct. 11, grading, drainage, 3.7 mi. non-system Hy., W.P.S.O. 423-A, Weakley Co. Will readvertise. Noted Oct. 15, C.D.—Oct. 3, E.N.-R.

Tex., Fort Worth—Nov. 12, by City, G. D. Fairtrace, mgr., permanent type paving Rosedale St. from Raimer Ave. to Macey St., $300,000. P.W.A. project. D. L. Lewis, city engr.

†Virginia—Nov. 21, by Pub. Rds., Dpt. Agriculture, Shenandoah Life Insurance Bldg., Roanoke, improving 8.49 mi. Shenandoah Great Smoky Mountains Parkway, from Jarmans Gap to Rock Fish Gap, Albermarle Co., incl. 357,000 cu.yd. excav. H. J. Spelman, dist. engr.; adv. Oct. 31, E. N.-R.

†Virginia—Nov. 25, by Pub. Rds., Shenandoah Life Insurance Bldg., Roanoke, improving 8.27 mi. road in Shenandoah Great Smoky Mountains Parkway from Adney Gap to Pine Spur Gap, Floyd and Franklin Counties, incl. 312,000 cu.yd. excav. H. J. Spelman, dist. engr.; adv. Oct. 31, E. N.-R.

†Virginia—Nov. 27, by Pub. Rds., Dpt. Agriculture, Shenandoah Life Insurance Bldg., Roanoke, improving 11.02 mi. Shenandoah Great Smoky Mountains Parkway from Pine Spur to Smart, Floyd and Franklin Counties. H. J. Spelman, dist. engr.; adv. Oct. 31, E. N.-R.

†Virginia—Nov. 29, by Pub. Rds., Dpt. Agriculture, Shenandoah Life Insurance Bldg., Roanoke, Va., constructing 9.77 mi. Shenandoah Great Smoky Mountains Parkway from Smart to Tuggle Gap, Floyd and Patrick Counties. H. J. Spelman, Roanoke, dist. engr.

†Virginia—Dec. 2, by Pub. Rds., Dpt. Agriculture, Shenandoah Life Insurance Bldg, Roanoke, constructing 9 mi. road in Shenandoah Great Smoky Mountains Parkway from Tuggle Gap to Rock Castle Gap, Floyd and Patrick Counties, incl. 311,000 cu.yd. excav. H. J. Spelman, dist. engr.; adv. Oct. 31, E. N.-R.

Washington—Nov. 13, by L. V. Murrow, dir. Hys., Olympia, stockpiling crushed stone surfacing, mineral aggregates and bituminous surface treatment on 64.7 mi. State Rd. 3, Clayton to Kettle Falls Bridge, Stevens and Ferry Counties; grading, crushed stone surfacing 7.3 mi. State Rd. 11, Tyler to Cheny, WPH 133-C, and WPH 20, Spokane Co., incl. 93,970 cu.yd. excav.; crushed stone surfacing 1.8 mi. State Rd. 12, Bear River Dyke, between Freenhead Slough and Bear River, Pacific Co., 1,480 cu.yd. excav.; concrete paving and rein.-con. viaduct on City Street, 1st Avenue South Overcrossing, Seattle, incl. 10,100 cu.yd. excav.; grading 1 mi. County Rd., White Salmon to Husum, WPSO 247-A, Klickitat Co., incl. 31,110 cu.yd. excav.; rein.-con. T-beam bridges, Pierce and Thurston Counties.

Wash., Bellingham—City soon takes bids resurfacing Holly St., et al. $25,000.

Wash., Seattle—Nov. 18, by Comrs. King Co., concrete paving 1.25 mi. Military Rd., south of here. $34,007. J. Dodd, County City Bldg., engr.

Wisconsin — Nov. 12, by State Hy. Comn., Madison, graveling 4.911 mi. Superior-Ashland Rd., Iron River-Ashland Rd., Bayfield Co.; grading, draining 4.001 mi. Prentice-Clifford-McCord Rhinlander Rd., McCord-Heafford-Junction Rd., Lincoln Co.; 7.535 mi. Milwaukee-Chicago Rd., Thompsonville-S.T.H. 20 Section and S.T.H. 20, South County Line Section, Racine Co.; 4.011 mi. Superior-Ashland Rd., Iron River-Ashland Rd., Bayfield Co.

†Wyoming—Pub. Rds. Dpt. Agriculture, Dist. 3, Custom House, Denver, Colo., soon takes bids road mix base surfacing 40 mi. South Entrance Sections 4-A1, and A2, East Entrance Sect. 5C, 2D and Grand Loop 1-E1, and 1-E2 Sections; base course surfacing 12 mi. Grand Loop Hy. 1-F1 and F2, sections between Canyon Junction to Lake Junction, 12 mi. east entrance approach road graded between Wapiti Ranger Station and Holm Lodge, 6 minor concrete structures on 8-A1, section Tower Junction-Cooke City Entrance Rd.; 2 concrete and masonry bridges over Gibbon River, Grand Loop, between Norris Junction and Madison Junction, all in Yellowstone Natl. Park.

B. C., Larkin — Canadian Pacific Ry., Vancouver, soon takes bids constructing diversion of Armstrong-Vernon Hy. between mileage 37.1 and 38.5 Canadian Pacific Ry. Okanagan Subdivision, for Dpt. P. Wks., Ottawa, Ont., $22,000.

B. C., Vancouver—See "Contracts Awarded."

N. B., Sackville—See "Contracts Awarded."

CONTRACTS AWARDED

Alabama — State Hy. Comn., Montgomery, grading, draining, chert surfacing 3.689 mi. Walnut Grove-Blountsville Rd., Blount Co., to W. C. Shepherd, 347 Elizabeth St., N. E., Atlanta, Ga., $52,262. Bids Sept. 6. Noted Sept. 17, C. D.

Arizona—State Hy. Comn., Phoenix, grading, draining and placing material and aggregate base course, Flagstaff-Fredonia Hy., to K[illegible]dgman & Pearson & Dickerson, 714 Plymouth Rd., Pasadena, Calif., $124,526. Bids Oct. 4. Noted Oct. 15, C. D.—Sept. 26, E. N.-R.

Arizona—State Hy. Comn., Phoenix, concrete paving, widening Tempe-Mesa Hy., to Phoenix Tempe Stone Co., Box 1645, Phoenix, $2[illegible]141. Est. $30,000. Bids Oct. 8. Noted Oct. 15, C. D.

Arizona—State Hy. Comn., Phoenix, grading, draining Kingman-Boulder Dam. Hy., to Packard Constr. Co., Phoenix, $51,499. Bids Oct. 11. Noted Oct. 3, C. D.

California—State Hy. Engineer, Los Angeles, grading, plant mixed surfacing (medium curing type), 12.5 mi. hy. between East Highline Canal and Midway Well, Imperial Co., to R. E. Hazard & Sons, 2548 Kettner Blvd., San Diego, $151,293. Bids Oct. 10. Noted Oct. 11, C. D.

California—State Hy. Comn., P. Wks. Bldg., Sacramento, grading, asphaltic concrete or concrete paving 3.8 mi. hy. between point 3.7 mi. north of Fairfield and point 0.6 mi. south of Vacaville, Solano Co., to Union Paving Co., Call Bldg., San Francisco, $178,698. Bids Oct. 16. Noted Oct. 21, C. D.

†Calif., Alameda—Con. Q. M., concrete paving at Benton Air Depot, to N. M. Bell, P. O. Box 404, Berkeley, $10,480. Bids Sept. 26.

Colorado—State Hy. Dpt., Denver, bituminous concrete paving 1.138 mi. Washington St. and 38th St. on State Hy. 185, Denver, Denver Co., to Western Paving Constr. Co., 5230 Washington St., Denver, $66,655; gravel surfacing 7.828 mi. hy. between Pagosa Springs and Durango, State Hy. 10, Archuleta Co., to Platt Rogers, Inc., Pueblo, $146,824***7.44 mi. hy. between Calhan and Matheson, El Paso Co., to Larson & Kranz, 1902 Blake St., Denver, $181,715. Grand total $395,194. Bids Oct. 10, awarded Oct. 18. Noted Oct. 14, C. D.—Oct. 3, E. N.-R.

†Colorado—Pub. Rds., Custom House, Denver, grading 1.483 mi. North St. Vrain Canyon Hy., to W. A. Coit & Son, Lyons, Colo., $59,243. Noted Oct. 21, C. D.

Conn., Stamford—Town, Town Hall, grading 3 acres Town Yard, also widening, grading 1,600 ft. Hall Ave. Est. $25,042. Owner builds. **W.P.A.**

Conn., Stafford — Municipality will repair, grade, drain and surface group of secondary farm to market roads, day labor. $21,000.

Ill., Berwyn—Dpt. P. Wks. & Buildings, Div. Hys., Albany, constructing 1.0013 mi. road, Sect. 4, C.S., Berwyn Co., to Suburban Paving Co. and Impvt. Co., 140 North Dearborn St., Chicago, $61,619. Bids Oct. 21.

Ill., Chillicothe—Dpt. P. Wks. & Building, Div. Hys., bituminous retread surfacing 1.852 mi. Sect. 1-C.S., to Rock Road Constr. Co., 5915 North Rogers Ave., Chicago, $26,566. **P.W.A.** Bids Sept. 17. Noted Sept. 10, C. D.—Sept. 12, E. N.-R.

Ill., Danville—Dpt. P. Wks. & Buildings, Div. Hys., bituminous filled brick paving 0.8299 mi. Sect. 3, C.S., to R. McGalman, Danville, $30,317. Bids Sept. 17.

Ill., Pontiac—Dpt. P. Wks. & Buildings, Div. Hys., to H. J. Eppel, Pontiac, graveling 3.0098 mi. Sect. 85-MFT, $10,002; traffic bound surface course on 1.0128 mi. Sect. 115 MFT, $3,340***to Riber, Gibbons & Neville, Dwight, bridge near Wing, $2,228; bridge on same road, Part 3, $2,110; rein.-con. deck girder bridge, near Cornell, $8,413, all foregoing Livingston Co. Grand total $36,093. Bids Sept. 6 and 12.

Ill., Paris—Dpt. P. Wks. & Buildings, Div. Hys., concrete paving 0.5839 mi. 2 lane at Paris, to A. F. Adams, Paris, $22,118. Bids Sept. 14.

Ill., Tuscola—Dpt. P. Wks. & Buildings, Div. Hys., traffic bound surfacing 2.8409 mi. Sect. 10-5d, Douglas Co., to E. R. Kelly, Mattoon, $22,538. Bids Sept. 9.

★ **Iowa** — State Hy. Comn., Ames, to Koss Constr. Co., 205 Old Colony Bldg., Des Moines, paving 7.418 mi. Cedar Co., $200,992; 0.515 mi. Jasper Co., $5,773**to Cameron Joyce Co., Keokuk, 3.295 mi. Van Buren Co., $87,008; 1.236 mi. Van Buren Co., $33,614; 0.431 mi. Van Buren Co., $15,133***to Carlson Constr. Co., Marshalltown, 3.022 mi. Benton Co., $71,356***to Amodeo Paving Co., Des Moines, 0.867 mi. Warren Co., $48,720***to W. Dutton, Boone, grading 0.416 mi. Carroll Co., $3,457*** to J. W. Scothorn, Cherokee, 0.435 mi. Sioux Co., $12,370***to Kelley Constr. Co., Des Moines, stabilized base coarse surfacing 5.696 mi. Cass Co., $20,847; 3.115 mi. Harrison Co., $7,127***to Wahl Constr. Co., Victor, graveling 4.472 mi. Adams Co., $13,523***to Yant Constr. Co., 115 Omaha Natl. Bank Bldg., Omaha, Neb., 5.389 mi. Harrison Co., $8,881. Grand total $528,801. Bids Oct. 15, awarded Oct. 18. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Kansas — State Hy. Comn., Oswego, earthwork, culverts 1.802 mi. P. 96-26-WPH 396-F, Greenwood Co., to R. G. Aldridge, 1609 Nebraska St., Kansas City, $48,819; 0.485 mi. P. 166-15-

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†Federal Government.

Streets and Roads (Continued)

PWS 57, Labette Co., to A. G. Sherwood, Independence, $13,386. Bids Oct. 15. Noted Oct. 1, C. D.—Oct. 3, E. N.-R.

Kansas—State Hy. Comn. at office County Clerk, Concordia, earthwork, culverts 2.119 mi. Project 81-23-W.P.H. 186-D, Cloud Co., to J. Coffey, Junction City, $38,810***crushed stone surfacing 4.28 mi. Project 14-18-W.P.H. 467-D, and 1.79 mi. Project 14-18-W.P.H. 467-B, both Lincoln Co., to Cook & Cone, Ottawa, $7,473 and $3,125 respectively***sand gravel surfacing 12.2 mi. Project 40N-23-6567, Clay Co. and 17.3 mi. Project 40-N-22-6566, Cloud Co., to D. L. Wheelock Constr. Co., Clay Center, $4,099 and $6,643 respectively. Grand total $60,150. Bids Oct. 18. Noted Oct. 7, C. D.

Kentucky—State Hy. Comn., Frankfort, rein.-con. paving 7.061 mi. Jackson-Hazard Rd., F. A. 138-BS, Breathitt Co., to W. F. Robinson & Son, Owensboro, $162,274. Former contract rescinded. Noted Sept. 5, C. D.—Sept. 12, E. N.-R.

Kentucky—State Hy. Comn., Frankfort, grading, draining 1.419 mi. Jackson-Salyersville Rd., Breathitt Co., to H. H. Miller Constr. Co., Jackson, $16,503***1.174 mi. Elizabethtown-Louisville Rd., Hardin and Meade Counties, to J. Oman, Jr., P. O. Box 146, Nashville, Tenn., $21,084***5.319 mi. Munfordville-Bowling Green Rd., Hart Co., and 1.724 mi. Hog Wallow-Big Springs Rd., Meade Co., to Kile Killman, Salem, Ind., $48,804 and $9,158 respectively***5.433 mi. Covington-Nicholson Rd., Kenton Co., to Ace Constr. Co., Horse Cave, $28,094***6.932 mi. Owenton-Corinth Rd., Owen Co., to J. P. Wilkinson & Co., Williamsburg, $29,430***traffic bound limestone surfacing 3.675 mi. Belmont-Wooldridge Ferry Rd., Bullitt Co., to G. Geoghegan, Bardstown, $9,708***12.47 mi. Peonia-Munfordville Rd., Hart Co., to Nally & Mudd & Tewmey & Gibson, Springfield, $23,015***3.136 mi. Eminence-Ballardsville Rd., Henry Co., to Blanton Stone Co., Frankfort, $13,098***5.393 mi. Dundee-Fordsville Rd., Ohio Co., to T. J. Atkins & Co., New Albany, Ind., $15,854***concrete paving 0.445 mi. 5th St., Newport, Campbell Co., to J. G. Exterkamp, Covington, $34,425***grading, draining, waterbound macadam surfacing 1.5 mi. Carrollton-Lock 1 Rd., Carroll Co., to Highland Co., Inc., 644 Baxter Ave., Louisville, $19,758***rock asphalt on waterbound macadam paving 0.636 mi. Main St., Brownsville, Edmonson Co., to Ralph E. Mills Co., Inc., Frankfort, $37,000***bank or creek gravel surfacing 10.012 mi. Mayfield-Dukedom Rd., Graves Co., and traffic bound river gravel surfacing 4 mi. Sullivan-Boxville Rd., Union Co., to R. M. Robinson, Owensboro, $22,021 and $15,154 respectively***bridges on Harlan-Liggett Rd., Harlan Co., to Alley Constr. Co., Inc., Bristol, Tenn., $23,741***overhead crossing of L. and N. R. R. tracks on Madisonville-Slaughters Rd., and overhead crossing of same railroad on Nortonville-Dawson Springs Rd., Hopkins Co., to A. Lyons, Rogersville, Tenn., $13,400 and $53,094 respectively***roadside improvement 7.923 mi. Louisville-Shelbyville Rd., Jefferson Co., to Hillenmeyer Nurseries, Lexington, $7,911***grading, draining 4.064 mi. Somerset-Ruth Rd., Pulaski Co., to Cundiff & Colyer, Somerset, $27,773***substructure and grading of approaches for bridge over Cumberland River on 0.353 mi. Williamsburg-Pineville Rd., Whitley Co., to Shields Constr. Co., Hazard, $31,622***steel truss span superstructure for foregoing bridge, to Vincennes Steel Corp., Vincennes, Ind., $41,069. Grand total $541,722. Bids Oct. 18. Rejected bids Oct. 18, surfacing 10.217 mi. Pineville-Williamsburg Rd., Bell Co.; 16.658 mi. same road, Whitley Co.; 26.875 mi. same road, Bell and Whitley Counties (combined); 8.421 mi. Greenville Rd., Muhlenberg Co. Noted Oct. 23, C. D.

Kentucky—State Hy. Comn., Frankfort, concrete paving approaches and steel girder spans for underpass on Covington-Florence Rd., Erlanger, Kenton Co., to E. J. Knepfle's Sons, Newport, $81,218***grading, draining 4.001 mi. Bagdad-Frankfort Rd. and 7.233 mi. Finchville-Fisherville Rd., Shelby Co., to Tye & Wells, Carrollton, $17,530 and $52,000 respectively. Grand total $150,748. Bids Oct. 4. Noted Oct. 8, C. D.—Sept. 12, E. N.-R.

Kentucky—State Hy. Comn., Frankfort, rock asphalt on concrete paving, using cold laid asphalt binder paving 0.316 mi. street in Hazard on Jackson Rd., Perry Co., to Shields Constr. Co., Hazard, $36,825. Bids Sept. 6. Noted Aug. 19, C. D.—Aug. 22, E. N.-R.

†La., Chalmette — Acting Superintendent Vicksburg Natl. Military Park, Vicksburg, Miss., constructing road, sewer, and water extensions in Chalmette Natl. Monument Park, to H. P. Farnsworth, 111 St. Charles Ave., New Orleans, $53,218. Noted Sept. 20, C. D.—Sept. 26, E. N.-R.

Maine—Augusta State Hy. Comn., Augusta, concrete paving 0.66 mi. F.A. 257-D, to Wyman & Simpson, Inc., 284 Water St., $49,850. Bids Oct. 8, awarded Oct. 17. Noted Oct. 17, C. D. —Oct. 3, E. N.-R.

†Md., Annapolis—Yards & Docks, Navy Dpt., Wash., D. C., paving road at high powered radio station, Spec. 7946, to H. T. Campbell Sons Co., Towson, $17,800. Noted Oct. 22, C. D.

Md., Baltimore—Bd. Awards, concrete paving streets in Paving Contr. 658, to Arundel Constr. Co., 910 Trinity St., $7,452; sheet asphalt paving Contr. 659, to National Paving & Contg. Co., Menlo Dr. and Wheeling & Maryland R.R., $27,375. Bids Oct. 10. Noted Oct. 21, C. D.

Minnesota—State Hy. Comn., St. Paul, grading 1.4 mi. State Project 36-118-21-3, W.P.M.S. 464-D, between McMenemy Rd. and Trunk Hy. 61, to W. W. Magee, 118 West Central Ave., St. Paul, $54,107***7.3 mi. S.P. 55-142-24-1, W.P.H. 529-A and W.P.M.H. 529-B, between North Kandihohi Co. line and Paynesville, and 6.6 mi. S.P. 55-142-24-2, W.P.H. 529-A and W.P.M.H. 529-B, between Belgrade and South Stearns Co. line, to DeRuyter Bros., Willmar, $40,041 and $34,884 respectively***3.5 mi. S.P. 78-181-22-1, W.P.S.S. 527-A and W.P.M.S. 527-B, 7.1 mi. S.P. 108-181-21-1, W.P.S.S. 527-A and W.P.M.S. 527-B, 6.1 mi. S.P. 108-181-21-2, W.P.S.S. 527-A and W.P.M.S. 527-B, to Farrell & Clark, 1607 Wynne St., St. Paul, $16,670, $28,932 and $25,683 respectively*** 0.9 mi. S.P. 100-13-21-1, W.P.M.S. 526-A, between Junction Trunk Hy. No. 78 and 4½ mi. north of Henning, to M. J. O'Neil, 609 New York Bldg., St. Paul, $39,878***6.6 mi. S.P. 83-83-21 and S.P. 83-83-22-1-A, W.P.S.S. 498 A and B, between Junction Trunk Hy. 15 and Cambria, to R. Larson, Stewartville, $33,790. Grand total $273,985. Noted Sept. 24, C. D.—Sept. 26, E. N.-R.

New Hampshire—State Hy Dept., Concord, surface treated graveling 1.416 mi. F.A.P. 221-F, Northumberland and Stratford, to Littleton Constr. Co., Littleton, $30,774***1.263 mi. F.A.P. 267-B, Hopkinton and Dunbarton, to Jas. E. Watkins Co., Inc., 41 Powow St., Amesbury, Mass., $15,116***1.629 mi. F.A.P. 43-A, Northwood, to J. J. Callahan, 119 Park St., West Roxbury, Mass., $46,392. Grand total $92,282. Bids Oct. 3, awarded Oct. 17. Noted Oct. 14, C. D.—Sept. 26, E. N.-R.

New Jersey—State Hy. Dpt., Trenton, grading, paving, Route 1, Sect. 9-A, Danforth Ave. to Lehigh Valley R. R., Jersey City and Bayonne, Hudson Co., to LaFera Grecco Contg. Co., 149 Verona Ave., Newark, $592,553. Noted Sept. 26, C. D.—Oct. 3, E. N.-R.

N. J., Cranford—City improving street from Fort Ave. to Ripley Pl., $11,451; West Scott Pl., $11,000; Bayway (Sect. 2), $11,830; park improvements, $3,500; also drainage ditch, $1,384. Day labor financed from W.P.A. funds. City will purchase materials.

N. J., Paterson—Municipality improving Alabama Ave., $18,375; Granite Ave., $7,434; West Railway Ave., $5,940; Katz Ave., $11,941, and other street work, $3,985, by day labor. Will purchase materials.

New Mexico—State Hy. Comn., Santa Fe, improving roads in Torrance Co., to Wheeler & Silver, Albuquerque, $51,937 est. $56,131*** in Santa Fe and Torrance Counties, to G. W. Orr, El Paso, Tex., $107,321 est. $151,324*** Guadalupe Co., to Cook & Ramsom, Ottawa, Kan., $139,126 est. $121,533***Guadalupe Co., to Brown Bros., Albuquerque, $40,700 est. $49,079. Grand total $339,084. **P.W.A.** Bids Oct. 18. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. Y., Falconer—Chautauqua Co., improving highways in Brocton, $10,210; in Poland Twp., $19,039. Falconer day labor under supervision S. E. Fitch, co. engr., W.P.A.

N. Y., Gloversville—City, improving Main St., incl. removing car tracks, own forces, $56,547. W.P.A.

N. Y., Spencer—Village and Tioga Co., Village Hall, constructing park, incl. grading, planting, seeding, sidewalks, relief forces. 44,351. W.P.A. funds aloltted.

N. Y., Syracuse—Bd. Contr. & Supply, City Hall, Portland cement paving East Genesee St. from Croley St. to East Ave., own forces. To exceed $22,000.

N. Y., Utica—City, Bd. Educ., grading grounds at new East Utica High School, own forces. $84,381 allotted by W.P.A. J. E. Foote, city engr.

N. Y., Wellsville—City, grading, curbing, guttering, storm water drainage system in Farnum St., relief labor. $25,000. G. Esherick, village engr. **Maturity at once.**

N. Y., Yonkers—City, Dpt. P. Wks., City Hall, penetration paving Van Cortland Park Ave. from McLean to Park Hill Aves. and Cecil Crest and Crossways in Tenth Ward, Onondaga and Tioza Sts., own forces. $90,000. C. J. Sheridan, city engr.

North Carolina—State Hy. & P. Wks., Raleigh, concrete paving, structures 6.59 mi. Project 6324, Gaston and Cleveland Counties, to Carolina Contg. Co., Columbia, S. C., $154,623. Bids Oct. 3. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Oklahoma—State Hy. Dpt., Oklahoma City, grading, drainage 1.79 mi. Hy. 69, Mayes Co., to A. L. Cook, Ottawa, Kan., $13,583 est. $17,000; 2.59 mi. U. S. Hy. 270, Latimer Co., to Clessen & Venable, Beaver, $17,284 est. $20,000.

Pennsylvania—At office of W. Van Dyke, secy. hys., Harrisburg, bituminous on native or modified stone paving 0.28 mi. Route 750, Sect. 1, Tionesta Twp., Forest Co., to C. H. Fry Constr. Co., 1902 Cherry St., Erie, $12,146***rein.-con.

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†*Federal Government.*

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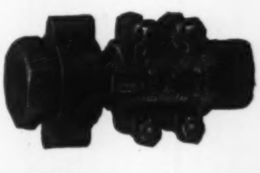

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Streets and Roads (Continued)

paving 1.74 mi. Route 3001, Sect. 2, Covington Twp., Lackawanna Co., to H. R. Miller, Box 1235, Lancaster, $115,399***rein.-con. paving 2.58 mi. and 1 rein.-con. bridge, Route 930, Sect. 1, Ross and Chestnut Hill Twps., Monroe Co., to J. H. Swanger, Brenneman Bldg., Lancaster, $128,955. Grand total $256,500. Bids Oct. 11. Noted Oct. 15, C. D.—Oct. 17, E. N.-R.

Pennsylvania—At office S. Van Dyke, secy. Hys., Harrisburg, bituminous on native stone widening, 11 ft. on each side, 0.49 mi., and dual type paving two 10 ft. lanes of rein.-con., and one 10 ft. center lane of native stone base with bituminous surface and 1 rein.-con. arch, Route 8, Sect. 4, Milford Borough, Pike Co., to F. D. Kessler, Northumberland, $36,605. Bids Sept. 27. U.S.P.W. project. Noted Oct. 1, C. D.—Sept. 19, E. N.-R.

Pennsylvania—At office W. Van Dyke, secy. hys., Harrisburg, rein.-con. paving 0.36 mi. pavement also steel truss bridge, Route 219, Liberty Twp. and Beech Creek Borough, Center and Clinton Counties, to Graham Constr. Co., Box 31, Lancaster, $56,569. Bids Oct. 4. Noted Oct. 8, C. D.—Sept. 26 E. N.-R.

Tennessee—State Hy. Dpt., Nashville, grading, draining 8.949 mi. Rutherford Co., to M. Wunderlich, Jefferson City, Mo., $147,568***paving 8.445 mi. Bradley and Polk Counties, to Municipal Paving & Constr. Co., 316 South 1st St., Nashville, $170,510***6.344 mi. Hardeman and Madison Counties, to Zeigler Constr. Co., 803 American Trust Bldg., Nashville, $121,060. Grand total $439,138. **P.W.A.** Bids Oct. 18, awarded Oct. 21. Noted Oct. 23, C. D.—Oct. 10, E. N.-R.

Washington—State Hy. Comn., Madison, grading, draining, 4.598 mi. road Shawano Co., to Schuster Constr. Co., Denmark, $57,852*** grading, draining, crushed stone surfacing 0.683 mi. Sauk Co., to J. E. Schultz, Albany, $17,658 ***graveling 4.569 mi. Shawano Co., to E. J. Murphy, F.F.D. 2, Kaukauna, $16,330***7 culverts in Shawano Co., to C. Stargardt, R.F.D. 3, Athens, $7,588***Wolf River Bridge and abutments, Shawano Co., to Zendala Constr. Co., 1020 South 25th St., Manitowoc, $10,879. Grand total $110,307. Bids Oct. 15. Improving road in Shawano Co. and Hill Point and Giese Bridge, Sauk Co., held up. Noted Oct. 21, C. D.

Washington—State Hy. Comn., Olympia, grading, draining, crushed stone surfacing 3.6 mi. road King Co., to Erickson Paving Co., 1550 North 34th St., Seattle, $91,671***concrete and asphaltic concrete paving 0.7 mi. Clark Co., to United Contg. Co., 311 Stock Exchange Bldg., Portland, Ore., $41,727***1.9 mi. Pierce Co., to Paine-Gallucci, Inc., 5121 South Grand Ave., Tacoma, $122,268. Grand total $255,666. Bids Oct. 15. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

Wisconsin—State Hy. Comn., Madison, grading, draining, graveling 2.789 mi. Jackson Co., to F. Mashuda, 2213 South 57th St., Milwaukee, $57,655; 6.173 mi. Juneau Co., to F. Kutzke, Brooklyn, $40,898. Bids Oct. 8. Noted Oct. 15, C. D.

B. C., Vancouver—Municipality, paving certain streets, day labor, $89,650. C. Brackenridge, engr.

Man., Winnipeg — Dpt. P. Wks., to A. M. Kelly, 882 Grosvenor Ave., grading, graveling Provincial Hys., Sect. 1, $17,585; Sect. 2, $15,250; Sect. 3, $13,500***to Tomlinson Constr. Co., 808 Confederation Life Bldg., in Russell and Silver Creek Municipalities, $66,852. Grand total $113,187.

Man., Winnipeg—Archibald MacGillvray, hy. comr., graveling 20 mi. Rablin-Benito Hy., to S. Ellis, Fox Warren, $24,000; graveling 13 mi. Dauphin-Winnipegoisi Hy., to A. E. Prentice, Winnipeg, $13,974.

N. B., Sackville—Municipality, concrete, and asphalt paving certain streets, day labor, $50,000. F. L. West, engr.

N. S., Springhill—Council paving, hard-surfacing and ditching Drummond St., to Warren Bituminous Co., Ltd., **Halifax.**

Ontario—R. M. Smith, deputy minister Hys., Dpt. Hys., Ottawa, penetration paving 7.5 mi. from Stirling to Frankford, to H. T. Routley, 200 Dawlish Ave., Toronto***6 mi. East and West of Collins Bay, to McGinnis & O'Conner, 412 King St., Kingston***paving 2 mi. at Marmara, to Henniger & Scott, Smiths Falls*** 3.6 mi. Owen Sound South, to Law Constr. Co., 225 Sterling Rd., Toronto***at Parkenham, to Holmes & Jamieson, 71 Beatty St., Toronto. Est. $125,000. Noted June 24, C.D.—June 27, E.N.-R.

Ontario — R. A. Campbell, deputy minister Dpt. Northern Development, Toronto, constructing 13 mi. hy. from Big Jocko River to Temiskaming, North Bay, to Glesson-Martin & Co., Ltd., 56 Sparks St., Ottawa. Est. $130,000.

EARTHWORK, IRRIGATION DRAINAGE AND WATERWAYS

PROPOSED WORK

†Florida—Nov. 7, by U. S. Eng., Jacksonville, constructing 6,820,000 cu.yd. earthwork and dredging 640,000 cu.yd. Div. 4, Lake Okeechobee.

★ **†Georgia and South Carolina**—U. S. Eng., Wash., D. C., making studies improving Savannah River, incl. 100 ft. dam, for power and flood control. $17,500,000.

La., New Orleans — Sewerage & Water Bd., plans repairing Metairie Relief Canal from Broad St. to pumping station No. 6, Government, $8,925, Sewerage and Water Bd., $2,398; constructing sewers in Treasure, Joseph and Galvez Sts., Elysian Fields and Claiborne Aves., Government $5,973 and Sewerage and Water Bd., $2,771; reconstructing Orleans Canal from North Broad to North Hagan Sts., Government $7,656, Sewerage and Water Bd., $1,849. W.P.A. approved in Washington.

New Hampshire—State, Water Resources Bd., R. S. Holmgren, ch. engr., State House, Concord, plans rein.-con. dams at Pittsburg, New Ipswich and West Canaan. Each to exceed $25,000.

N. J., Avon by the Sea—Boro plans two 300 ft. steel sheet pile and rock extensions to existing jetties and replacement of existing timber with steel sheet piling in each existing jetty. $80,177. P.W.A. application. C. W. Birdsall, 1700 "F" St., Belmar, boro engr.

N. J., Belmar—Boro plans 200 ft. extension to existing rock breakwater and jetty with steel sheet piling core wall at 16th Ave., and 600 ft. rock breakwater and jetty with steel sheet piling core wall at 29th Ave. in Atlantic Ocean. $97,546. P.W.A. application. C. W. Birdsall, 1700 "F" St., engr.

N. J., Long Branch—City plans constructing 11 jetties along ocean front between South Bath Ave. and southerly limits of city as protection against encroachment of the sea. $438,135. P.W.A. application. O. W. Morris, 184 Bway., city engr.

N. Y., Addison—Bd. Trustees, A. Sisto, mayor, plans diking Canisteo River through village to junction of Tuscarora Creek, deepening creek and river beds, straightening, removing islands and brush, for flood control. $93,598. Applied for federal funds (probably W.P.A.).

N. Y., Brooklyn—Nov. 7, by R. V. Ingersoll, pres. Brooklyn Boro, dredging in Newtown Creek, Canal and its basins.

N. Y., New York—Nov. 4, by Henry Hudson Parkway Authority, W. E. Andrews, ch. engr., Arsenal Bldg., Central Park, constructing bulkhead and dredging Harlem River Ship Canal under Henry Hudson Bridge.

Pa., New Cumberland—Village survey completed for diverting channel of polluted stream by piping flow. $17,500 or more. Plans application to P.W.A. for funds to proceed with project. Village Eng. Dpt., engrs. Noted Dec. 14, C.D.—Dec. 20, E.N.-R.

★ **Pa., Pittsburgh**—H. J. Heinz Co. plans constructing flood wall along Allegheny River Bank at their plant. $450,000. Private plans.

★ **Tex., San Antonio**—City, c/o C. K. Quin, mayor, plans river work, consisting of deepening channel, straightening, widening, levees, beautification. $750,000. City to furnish $50,000 and W.P.A. $700,000. Bond election date to be set in a few days. I. Ewig, city engr.

Wash., Mikilteo—Port Dist., M. Weborg, secy., plans constructing small boat harbor, dredging, bulkheading. $175,000. Applied for P.W.A. funds.

W. Va., Wellsburg—City plans 1,100 ft. concrete, stone wall, 22 ft. high, along left shore of Ohio River for flood protection. City Dpt. of Eng., City Hall, engr. **Maturity soon.**

BIDS ASKED

†Ariz., Yuma—Nov. 21, by Bureau Reclamation, Dpt. Interior, Federal Bldg., constructing Imperial Dam and Desilting Works, All American Canal System, Boulder Canyon Project, Arizona-California-Nevada, incl. 572,000 cu.yd. all classes excavation for dam; 791,000 cu.yd. all classes excavation for desilting works; 16,000 cu.yd. all classes excavation for roads; 1,079,000 cu.yd. excavation for borrow pits.

†Me., Eastport—Nov. 7, by U. S. Eng., Eastport, rock core drilling for foundation exploration, near here.

†Maryland—Nov. 11, by U. S. Eng., Baltimore, dredging 611,700 cu.yd., in vicinity of West Ocean City and Isle of Wight Bay; adv. Oct. 31, E. N.-R.

†Mass., Bourne—Nov. 5, by U. S. Eng., Boston, dredging, removing old bridge piers on both sides Cape Cod Canal.

†Mass., Bourne — Nov. 12, by U. S. Eng., Custom House, Boston, excavating and revetment on south side Cape Cod Canal, from Station 325 plus 00 to 391 plus 00. To exceed $50,000; adv. Oct. 31, E. N.-R.

N. Y., Deposit—See "Contracts Awarded."

N. Y., Johnson City — See "Contracts Awarded."

N. Y., Southport—See "Contracts Awarded."

Pa., Erie—See "Contracts Awarded."

†W. Va., Huntington—Nov. 15, by U. S. Eng., P. O. Box 548, furnishing, delivering emergency bulkhead units for Gallipolis Dam, Ohio River; adv. Oct. 31, E. N.-R.

†Wis., Onalaska—Nov. 21, by U. S. Eng., St. Paul, Minn., constructing dam in Black River.

Wis., Shorewood—See "Contracts Awarded."

CONTRACTS AWARDED

Ala., Hamilton — State Drainage Dist. 4, Marion Co., drainage ditches and creosoted timber bridges on Luxapallilla Creek, to Hooper Constr. Co., c/o Whilley Hotel, Montgomery, about $39,000. **P.W.A.** R. L. Kenan & Associates, Bell Bldg., Montgomery, engr.

†Arkansas — U. S. Eng., P. O. Box 667, Vicksburg, Miss., constructing 447,475 cu.yd. earthwork on Red River, to J. J. McKeithen, Grayson, La., $8,374***447,475 cu.yd. earthwork, to J. Hendricks, Alexandria, La., $26,182***447,475 cu.yd. earthwork, to G. [illegible] Croxton, Memphis, Tenn., $13,476. Grand total $48,031. Bids Sept. 24. Noted Sept. 13, C. D. —Sept. 19, E. N.-R.

Calif., Eureka—City Council, removing 50,000 cu.yd. dirt in connection with Mad River Dam project, to T. E. Connolly-Hanrahan Co., 461 Market St., San Francisco at 20c. per cu.yd. **P.W.A.** Awarded Oct. 22.

†Ill., Cairo—U. S. Eng., Post Office Box 97, Memphis, Tenn., constructing steel sheet piling walls, earthern fills, at Cairo, to Missouri Eng. & Constr. Co., 5481 Hamilton Ave., St. Louis, Mo., $382,083. Bids Oct. 1. Noted Sept. 13, C. D.—Sept. 19, E. N.-R.

★ **†Louisiana**—U. S. Eng., Prytania St. and River Front, New Orleans, constructing 97,000 cu.yd. earthwork in Mississippi River below New Orleans, and 3,730,000 cu.yd. in Bonnet Carre New Orleans Levee, to Lower Coast Constr. Co., 1100 South Claiborne St., New Orleans, $160,382 and $150,828 respectively***3,370,000 cu.yd. in latter levee, to Clarke Bros. Constr. Co., Wolf Bldg., Clinton, Ia., $271,092. Grand total $583,302. Bids Oct. 8. Noted Oct. 16, C. D.

La., Monroe—Gravity Drainage Dist. 1, constructing storm drainage pumping station, 100,000 g.p.m. in 2 units, electrically driven, concrete piling, electric controls, and auxiliary equipment, to Fairbanks, Morse & Co., St. Charles Ave., New Orleans, $54,677. C. A. Perrman, Monroe, engr. Awarded Oct. 17.

†Me., South Portland—U. S. Lighthouse Service, Portland, stone retaining wall, to Green & Wilson, Waterville, $11,235. Bids Sept. 12.

†Mass., Gloucester—U. S. Eng., Milwaukee, Wis., repairing and extending stone rip rap breakwater in Gloucester Harbor, to Bay State Dredging & Contg. Co., 62 Condor St., East Boston, $5,800. Bids Oct. 10, awarded Oct. 18. Noted Oct. 21, C.D.—Oct. 3, E.N.-R.

†Nev., Boulder City—Bureau Reclamation, Dpt. Interior, Wash., D. C., structural steel supports, gratings for walkways, stairs and ladders to be installed in Upper Arizona and Upper Nevada Tunnels at Boulder Dam, Boulder Canyon Project, Items 1 and 2, to Reliance Steel Products Co., Rankin, Pa., $26,460; handrails, Item 3, to Crane O'Fallon Co., 1631 15th St., Denver, Colo., $3,425. Bids Aug. 29. Noted Aug. 12, C. D.—Aug. 15, E. N.-R.

N. Y., Binghamton—Dpt. P. Wks., City Hall, flood control along Chenango River front, incl. steel and timber piling, excavating and backfilling. Contr. A. to Municipal Constr. Co., Marine Bldg.***Contr. C. to Binghamton Constr. Co., Marine Midland Bldg. Total est. $100,000. Binghamton Constr. Co. will purchase 65 tons sheet steel piling. Noted Sept. 11, C.D.—Sept. 19, E. N.-R., under "Contracts Awarded."

N. Y., Deposit—Village, constructing stone wall in Bone Creek, own forces, under direction of owner and C. W. Conde, district W.P.A. director, Binghamton. $19,444. W.P.A. funds granted.

N. Y., Deposit—Village, Village Hall, flood control work, constructing dry masonry stone retaining wall, along Butler Brook Creek, own forces. $23,590. Owner supervises construction. W.P.A. funds allotted.

N. Y., Johnson City—Bd. Trustees Village Bd., Village Hall, improving Choconut Creek, incl. widening, deepening, concrete walls, etc., for flood control, own forces under supervision J. C. Adams, village engr. Noted July 26, C. D.—Aug. 1, E. N.-R., under "Contracts Awarded."

N. Y., Southport — Bd. Supervs. Chemung Co., Elmira, repairing dikes Chemung River, by W.P.A. forces. $15,000. C. C. Hunter, c/o owner, consult. co. engr.

†North Carolina — U. S. Eng., Norfolk, dredging 23,000 cu.yd. from Scuppernog River, to Atkinson Dredging Co., Route 3, Norfolk, Va., 22.7c. per cu.yd. Bids Oct. 9.

Pa., Erie—City, City Hall, cleaning channels of McDannell's Run, Motch Run and Garrison Run, day labor (relief) under supervision A. N. Aitkin, city engr., City Hall, and B. J. Cochran, dist. dir. W.P.A. Est. $32,448. **Maturity at once.**

†Va., Norfolk—U. S. Eng., 117,000 cu.yd. maintenance dredging in Appomatox River, Petersburg, to point of Rocks, to S. B. Brooks, Inc., Canton House, South and Water Sts., Baltimore, Md., $25,038. Bids Oct. 10. Noted Oct. 3, C. D.

†Federal Government.

Earthwork, etc. (Continued)

†Wash., Port Townsend—Treas. Dpt. at office Sup. Archt., Wash., D. C., channel protection at entrance to boat basin, to Puget Sound Bridge & Dredging Co., 2929 16th Ave. S.W., Seattle, $31,400. Bids Sept. 16. Noted Sept. 19, C.D.—Aug. 22, E.N.-R.

†W. Va., Hinton—U. S. Eng., Huntington, awarded contract core drillings at Bluestone Dam site in New River, near here, to Pennsylvania Drilling Co., 1205 Chartiers Ave., Pittsburgh, Pa., $22,643. Noted Sept. 24, C. D. Sept. 26, E. N.-R.

Wis., Shorewood—Village, building jetties at East Capitol Dr. and improving Lake Shore Dr., relief labor. $109,674. H. A. Schmitt, city engr.

Alta., Sylvan Lake—Dpt. P. Wks., Ottawa, Ont., constructing breakwater, to F. Mannix, Calgary, $17,258. Est. $15,500.

Sask., Swift Current—Val Marie Irrigation Dist., Water Development Comn., canal excavation in connection with work to be done in Val Marie Irrigation Dist., to Gibbs & Ramsay, Lumsden, Sask., $10,300; timber structures, to Graham & Love, Moose Jaw, $6,625. Noted Oct. 9, C. D.—Oct. 17, E. N.-R.

FEDERAL POWER COMMISSION

Applications for Licenses and Permits

Licenses

1335—San Joaquin Light & Power Corp., Fresno, Calif., wants license constructing power project on Merced River, Merced and Mariposa Counties.

1336—Seven-Up Gold Mining Co., Inc., 2017 Smith Tower, Seattle, Wash., wants license constructing transmission line in Lewis and Clark Co., Montana, affecting lands in Helena Natl. Forest.

1337—Morning Glory Mines, Inc., Helena, Mont., wants license constructing transmission line in Jefferson Co., affecting public lands and lands in Deerlodge Natl. Forest.

1338—Montana Power Co., Butte, Mont., wants license constructing transmission line in Jefferson Co., affecting public lands to supply power to Mantle Mine and Morning Glory Mine tap line.

1339—Jack Pot Mining Co., Boseman, Mont., wants license constructing transmission line in Madison Co., affecting public lands.

1340—Southern California Edison Co., Ltd., 601 West 5th St., Los Angeles, Calif., constructed transmission lines in Los Angeles and San Bernardino Counties affecting lands in Angeles Natl. Forest.

1341—Southern California Edison Co., Ltd., 601 West 5th St., Los Angeles, Calif., wants license constructed transmission line in Los Angeles Co., affecting Angeles Natl. Forest.

1342—Southern California Edison Co., Ltd., 601 West 5th St., Los Angeles, Calif., wants license constructing transmission line in Los Angeles Co., affecting lands in Angeles Natl. Forest.

UNCLASSIFIED

PROPOSED WORK

Arizona — TRANSMISSION LINE — Arizona Power Co., and Flagstaff Electric Light Co., G. T. Herrington, genl. mgr., Flagstaff, preliminary plans constructing 40 mi. transmission line from Arizona Power Company's hydro-electric plant on Fossil Creek and substation at end of line. $75,000.

Calif., San Francisco—WHARF, etc.—State, Harbor Comn., Ferry Bldg., making plans conmeeting wharf and wharf shed, concrete jacketed piles, timber deck. Piers 24 and 26. $95,000. F. G. White, Ferry Bldg., engr.

Calif., Susanville—LIGHT AND DISTRIBUTION SYSTEM—City bond election about Nov. 1, to finance construction of electric light and power distribution system. $66,000.

Conn., Bridgeport — STADIUM — City, Bd. Educ., made plans 6,000 seating capacity, rein.-con. stadium at Warren Harding High School. $35,000. W.P.A. project. $25,000 grant applied for. F. J. Dixon, State St., engr.

Conn., New Canaan—RECREATION—Town, Bd. Selectmen, Town Hall, preliminary plans recreation facilities at Mead Memorial Park, incl. brick building. $26,000. W.P.A. project. Funds to be transferred from F.E.R.A. approved. H. B. Purdy, Railroad Ave., engr.

★ **Ill., Chicago**—EXHIBITION—Chicago Exposition Authority, City Hall, preliminary plans permanent exposition building, Burnham Park. $6,500,000. C. Peterson, chn.

La., Carthage—OIL and GAS DEVELOPMENT—Danciger Oil & Refining Co. plans oil and gas development on 10,000 acre site, vicinity of here. To exceed $40,000.

La., Carthage—OIL and GAS DEVELOPMENT—Modisette & Jolley, 611 Spring Hill Ave., Shreveport, plans oil and gas development (on 5,000 acre lease), Carthage, vicinity Panola Co. To exceed $40,000.

La., Cedar Grove—PIPE LINE—Rodessa Oil & Refining Co., M. G. Grogram, in charge, Cedar Grove, plans 40 mi. pipe line, from here to Rodessa fields. **Maturity indefinite.**

Mass., Hull — HARBOR, etc. — Town, J. A. Smith, Town Eng., Town Hall, preliminary plans started construction harbor of refuge and roadway, incl. dredging, pier, etc. $130,000. Application made to P.W.A. for funds. Fay, Spofford & Thorndike, 44 School St., Boston, engrs.

Minn., Granite Falls—PARK—Yellow Medicine Co., G. H. Wulson, aud. and City of Granite Falls, c/o Park Bd., L. A. Connors, chn., plan constructing 90 acre park on Minnesota River, incl. buildings, roads, bathing beach, recreation fields, etc. $70,000. C. H. Ramsdell, 738 Metropolitan Life Bldg., Minneapolis, landscape archt.

Minn., Thief River Falls—SKATING RINK—City, P. G. Pederson, city clk. plans 1 story, 90x220 ft. municipal skating rink. $25,000. W.P.A. project. $15,000 bonds voted. H. C. Eckland & Co., Thief River Falls, engr.

Neb., Omaha—AIRPORT—City making plans constructing and improving airport, incl. new lights, signal system, new runways, resurfacing present runways, buildings, grading, landscaping, East Omaha. $500,000. Will apply for W.P.A. funds. H. C. Merrithew, city lighting engr. A. Fitzgerald, city archt. C. Wehrhahn, city electrical engr. C. G. Schell, city engr.

N. J., Harrison — DOCKS — See "Industrial Buildings."

N. J., Long Branch — BOARDWALK — City Council plans boardwalk over present roadbed on Ocean Ave. between Seaview and Brighton Aves., and covering present boardwalk. $379,086. P.W.A. aid. O. W. Morris, 184 Bway., city engr. Noted Aug. 14, C. D.—Aug. 22, E. N.-R.

N. Y., Alfred — ATHLETIC FIELD — Alfred University plans reconstructing athletic field. To exceed $50,000. Campaign for funds in progress.

N. Y., Auburn—STADIUM, etc.—Bd. Educ., City Hall, making plans stadium and athletic field, $55,935. Gavin & Hadden, 605 5th Ave., New York, engrs.

N. Y., Carthage — SWIMMING POOL — Bd. Village Trustees made plans constructing rein.-con. swimming pool. $25,000. Will apply for federal loan.

N. Y., Humphrey—OIL DEVELOPMENT—Gem Oil Co., Bradford, Pa., plans developing 125 acres oil property, incl. drilling 10 or more 1,200-1,400 ft. wells. $35,000. **Maturity at once.** Owner will purchase pipe and pumping equipment.

N. Y., Long Beach—COMFORT STATIONS—Municipality, C. Gold, mayor, bids late in winter constructing 4 comfort stations along boardwalk. To exceed $40,000.

N. Y., Schenectady—BROADCASTING STATION—Knox Broadcasting Co., Inc., Johnstown, plans constructing one kilowatt broadcasting station. Applied for license to Federal Communications Comn., Wash., D. C.

N. Y., Syracuse—PARK—Bd. Supervs. Onondaga Co., Court House, made plans extending Onondaga Lake Park, near here. $57,100. Will apply for P.W.A. funds.

N. Y., Syracuse—SWIMMING POOL—Knights of Columbus, 407 James St., c/o J. B. Toomey, dir. Catholic Charities, plans constructing swimming pool, bowling alleys, etc. $40,000. P.W.A. funds allotted.

N. C., Gastonia—RADIO STATION—J. B. Roberts, Gastonia, plans 1,420 kilocycle, 100 watts, unlimited radio station.

O., Hamilton—SWIMMING POOLS, etc.—City Council approved following work for W.P.A. projects, now awaiting federal approval, swimming pools and recreational facilities, $225,000. R. P. Price, city mgr. W. A. Smalley, city engr.

Pennsylvania—PRESSURE PLANTS—J. L. Billstone, R. F. D. 1, Clarendon, plans installing pressure plants to force recovery of crude oil from 36 oil wells in Mead and Glade Twps., Warren Co. $25,000. Private plans.

Pa., Corry — AIRPORT — City preliminary plans municipal airport. $17,750 or more. City Engineer, engr.

Pa., Sharon—POLICE RADIO SYSTEM—City Council, plans constructing police radio station. $17,750 or more. Granted license WQF-U from Federal Communications Comn. Station to be completed and ready for operation by Apr. 1, 1936.

Tenn., Paris — ELECTRIC DISTRIBUTION SYSTEM—City plans bond election soon to finance construction of electric distribution system, incl. power substation facilities. $325,000. J. S. Watkins, Citizens Bank Bldg., Lexington, Ky., engr.

Texas—OIL and GAS—Petroleum Producers Co., Wichita Falls, plans oil and gas development drilling, transportation service, etc., in Portwood Oil fields, Baylor Co. To exceed $40,000.

Texas—OIL and GAS—Ray & Stamforth, Wichita Falls, plans development of oil and gas properties in Portwood Oil fields, Baylor Co. To exceed $50,000.

Tex., El Paso—SWIMMING POOL—City, E. J. Cummins, secy., plans constructing 60x150 ft. rein.-con. swimming pool. $31,000. Applied for P.W.A. loan and grant. Fraser & McGhee, El Paso, engrs.

★ **Tex., Lubbock**—NATURAL GAS DISTRIBUTING SYSTEM—City, c/o W. B. Trotter, mgr., voted $1,200,000 bonds complete natural gas system, consisting of complete plant and equipment, distributing lines, booster stations, etc. Engineer, c/o city engr. Noted May 8, C. D.—May 16, E. N.-R.

Tex., Haslam—OIL and GAS—Sun Oil Co., Russell and Elk Sts., Baltimore, Md., plans oil and gas development in Shelby Co. East Texas oil fields. To exceed $50,000.

★ **Wash., Everett**—AIRPORT—Comrs. Snohomish Co. have taken option on site for airport, 6 mi. southwest of here. $5,000,000. Applied for P.W.A. funds. C. Hickey, Court House, engr.

Wash., Prosser—POWER LINE—Benton Co. Public Utility Dist., plans public power line. Applying for funds from F.E.R.A. R. E. Towne, Perkins Bldg., Tacoma, engr.

Wash., Tacoma—PIER and DOCK—Port of Tacoma, G. W. Osgood, mgr., plans reconstructing and repairing pier 1 and open storage dock. $88,495. P.W.A. approved financing.

Alberta, Canada and Montana, U. S. A.—GAS—Coutts Gas Co. Ltd., Coutts, Alta., Canada, plans to supply natural gas to town of Coutts, Alta., incl. construction of 600 ft. pipe line across border from Montana, U. S. A., gas field and constructing distribution plant, service mains, etc. **Maturity soon.**

Man., Winnipeg — HYDRO EXTENSION — Manitoba Power Comn. making plans constructing hydro extensions in Steinbach, Lorette and Ste. Anne in Southeastern Manitoba. $100,000.

Que., Montreal — FIRE ALARM BOXES — Executive Com. cancelled contract to Metropolitan Electric Co. for supply and installation of fire alarm boxes on Park Ave. and Jean Talon Sts. $29,393. Noted Aug. 15, C. D.

LOW BIDDERS

†Fla., Miami—AIR STATION—Nov. 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing air station.

Illinois — POWER LINE — See "Contracts Awarded."

†Ill., Rock Island—POWER CONTROL, etc.—Nov. 14, by U. S. Eng., constructing power control and lighting system at Lock and Dam 18, in Mississippi River.

†Ill., Rock Island—POWER CONTROL—Nov. 26, by U. S. Eng., constructing power control and lighting system at Lock and Dam 11, Mississippi River.

Mo., St. Louis—COMFORT STATIONS—Nov. 26, by Bd. P. Service, City Hall, constructing 25 concrete, brick, comfort stations, in various city parks. $125,000. A. Osburg, city archt. W. C. E. Becker, city engr.

New York—RURAL ELECTRIFICATION—See "Contracts Awarded."

New York—TRACK BONDING, etc.—Nov. 12, by Bd. Transportation, J. H. Delaney, chn., 250 Hudson St., New York, furnishing, installing D.C. connections and track bonding for Independent City-Owned Rapid Transit R. R., from 81st to 178th Sts., incl. Jamaica Yard and approaches, Queens Boro; and from South Oxford St. to Nassau Ave., Brooklyn Boro; furnishing, installing lighting equipment, incl. electrical heating, toilet ventilation, for Independent City-Owned Rapid Transit R.R. between and adjacent to Elmhurst Ave. and 178th St. Stations; lighting and power systems for Jamaica Yard, Queens Boro. P.W.A. project.

N. Y., Albany — PARK — See "Contracts Awarded."

N. Y., Albion—AIRPORT—See "Contracts Awarded."

N. Y., Binghamton—PARKS—See "Contracts Awarded."

N. Y., Buffalo—RADIO BROADCASTING STATION—See "Contracts Awarded."

N. Y., Cobleskill—AIRPORT—See "Contracts Awarded."

N. Y., Geneva—AIRPORT—See "Contracts Awarded."

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†*Federal Government.*

Unclassified (Continued)

N. Y., Hornell—AIRPORT—See "Contracts Awarded."

N. Y., New York—FIELD HOUSE—See "Contracts Awarded."

N. Y., Oneonta—AIRPORT—See "Contracts Awarded."

N. Y., Sidney—AIRPORT—See "Contracts Awarded."

N. Y., Utica—PLAYGROUNDS—See "Contracts Awarded."

N. Y., West Haverstraw—PARKS, etc.—See "Contracts Awarded."

Texas—OIL DEVELOPMENT, etc.—See "Contracts Awarded."

Tex., Port Lavaca — HARBOR IMPROVEMENTS—See "Public Buildings."

B. C., Vancouver—CREMATORIUM—C. B. K. Van Norman, 398 Burrard St., taking bids for remodeling present building and constructing addition to crematorium at Mountain View Cemetery, incl. rein.-con. columbarium with bronze niches and latest crematorium equipment, chapel, family room and additional offices.

CONTRACTS AWARDED

Illinois—POWER LINE—Interstate Power Co., Dubuque, Ia., electric power line from Galena to Hanover, to supply power to Hanover Woolen Mfg. Co., Hanover, day labor. To exceed $25,000.

★ **Michigan and Ohio**—OIL PIPE LINE—Simrall Pipe Line Co., Mt. Pleasant, Mich., (owned jointly by Simrall Pipe Line and Standard Oil Co. of Ohio), constructing 140 mi. 8 in. pipe line from Crystal, Mich., to Toledo, O., to Franklin Tool Co., **J. W. C. McKee, mgr., Mt. Pleasant, Mich. Est. $1,000,000.**

New York—RURAL ELECTRIFICATION—Rochester Gas & Electric Corp., Rochester, constructing 175 mi. rural electrification in Monroe and Wayne Counties, day labor and separate contracts. $300,000. Noted Oct. 3, C. D.—Oct. 10, E. N.-R.

N. Y., Albany—PARK—City, City Hall, improving city parks, incl. grading, sidewalks, seeding, planting, etc., own forces. $49,172. W.P.A. funds allotted. J. J. McManus, city engr.

N. Y., Albion—AIRPORT—Village, Village Hall, airport improvements, incl. hangar, etc., relief labor. $80,000. Owner purchases materials. W.P.A. funds allotted.

N. Y., Binghamton—PARKS—City, City Hall, grading, seeding, planting, etc., for Ross and MacArthur Parks, own forces. $29,193. W.P.A. funds granted. C. A. Harrell, city engr.

N. Y., Buffalo — RADIO BROADCASTING STATION—R. L. Albertson, 412 Lafayette Ave., constructing radio broadcasting station, separate contracts. To exceed $17,750. Private plans. Noted Feb. 28, C. D.—Mar. 7, E. N.-R.

N. Y., Cobleskill—AIRPORT—Village, Village Hall, improving airport, incl. new hangar, runways and lighting, own forces. $80,000. W.P.A. funds granted.

N. Y., Geneva—AIRPORT—City, City Hall, constructing airport, incl. landing field and buildings, relief labor. $80,000. Owner will purchase materials. W.P.A. funds allotted.

N. Y., Hornell—AIRPORT—City, City Hall, constructing airport improvements, incl. hangar, etc., relief labor. $80,000. Owner purchases materials. W.P.A. funds allotted. F. H. Robinson, city engr.

★ **N. Y., Long Beach**—BOARDWALK—City Council, demolition of old concrete boardwalk, to A. M. Hazel, 117 Liberty St., New York. Total est. $1,000,000. **P.W.A.** Bids Oct. 14. Noted Oct. 3, C. D.—Oct. 10, E. N.-R.

N. Y., New York — FIELD HOUSE — Dpt. Parks, Arsenal Bldg., Central Park, constructing 1½ story, 25x104 ft. field house, East 193rd St. and Jerome Ave., day labor. $55,000. Will purchase materials. A. Embury, c/o owner, archt.

N. Y., Oneonta—AIRPORT—City, City Hall, improving municipal airport, incl. grading, draining, runway, etc., own forces. $80,000. W.P.A. funds allotted.

N. Y., Rochester—SWIMMING POOL—F. G. Maggio & Bros., Inc., general contractors, 374 Augustine St., structural steel for swimming pool, spectators stands, etc., at John Marshall High School, Ridgeway Ave., for Bd. Educ., J. S. Mullan, secy., to Leach Steel Co., 80 Steel St. Noted Sept. 17, C. D.—Sept. 19, E. N.-R.

N. Y., Sidney—AIRPORT—Village, Village Hall, improving airport, incl. new hangar, etc., own forces. $40,000. W.P.A. funds allotted.

N. Y., Utica—PLAYGROUNDS—City, City Hall, grading, seeding Platt Playground, 17th Ward Playground, Butler Playground, Gilbert Playground, Pixley Playground, Seymour Playground, Cooper Playground, F. T. Proctor Playground, H. C. Miller Playground and Potter Playground, own forces. $22,457. W.P.A. funds allotted. J. E. Foote, city engr.

N. Y., West Haverstraw — PARK, etc. — Municipality, park improvements, day labor. $87,300. W.P.A. funds allotted. **Will purchase materials.**

Texas—OIL DEVELOPMENT, etc.—Humble Oil & Refining Co., Tulsa, Okla., developing oil and gas properties, vicinity Mount Enterprise, day labor and separate contracts. To exceed $50,000.

Tex., Jacksonville — SWIMMING POOL — S. Barbier & W. Garrett, constructing 75x150 ft., 1 to 8 ft. deep rein.-con. swimming pool, to D. T. Ross, Tyler, $25,000. Est. $28,000. Private plans.

B. C., Vancouver—DOCK—Buckerfield's Ltd., foot of Rogers St., constructing 135x450 ft. loading dock on 1,000 creosoted wood piles, to Todd Constr. Co. Ltd., foot of Nanaimo St., $50,000.

Que., Riviere Ouelle — WHARF — Secretary Dpt. P. Wks., Ottawa, Ont., reconstructing wharf, to N. Boucher & A. Montminy, St. Francois, $22,517. Est. $40,000. Noted Oct. 8, C. D.

MATERIALS AND EQUIPMENT

PROPOSED WORK

ROAD GRADER, etc.—**Bozeman, Mont.**—Gallatin Co., I. W. Bigelow, clk., plans purchasing 1 power road grader and 1 oil burning tractor. S. D. Waldorf, co. surv.

TANKS—**Camden, N. J.**—American Oil Co., American Bldg., Baltimore, Md., plans installing 500 and 1,000 gal. steel tanks, electric pump, etc., at gasoline service station, 7th and Cooper Sts. To exceed $1,000.

STEEL TANKS, etc.—**Buffalo, N. Y.**—J. F. Greene, 2249 Elmwood Ave., plans installing two 500 gal. steel tanks and electric pump at gasoline station, 2249 Elmwood Ave. To exceed $1,000.

TANK, etc.—**Buffalo, N. Y.**—S. & S. Service, Inc., 3229 Bailey Ave., plans installing 1,000 gal. steel tank and electric pump, 3231 Bailey Ave. To exceed $1,000.

STEEL TANKS—**Jamestown, N. Y.**—Sinclair Refining Co., 45 Nassau St., New York, plans installing 500 gal. steel tanks and electric pumps, at gasoline service station, East 2nd St. To exceed $1,000.

TANKS—**Long Island City, N. Y.**—Tompkins Kiel Marble Wks., Vernon Blvd., and 35th Ave., plans 6 fuel oil storage tanks, Vernon Blvd. and 35th Ave. $20,000. Private plans.

BULK STORAGE TANK—**Ozone Park, N. Y.**—V. Giglio, Rockaway Blvd. and 1st St., plans gasoline bulk storage tank (to exceed 10,000 gal. capacity), Rockaway Beach and 1st St.

FIRE ENGINE—**Tuckahoe, N. Y.**—Eastchester Bd. Fire Comrs., L. J. Archer, fire comr., plans purchasing 1,000 gal. pumping fire engine. $14,500.

BIDS ASKED

CAST IRON PIPE—**Placerville, Calif.**—E. A. Mahler, city clk., taking bids 1,100 ft., 6 in. c.i. water pipe, pre-calked, Class C, B and S, working pressure 130 lbs. or more together with fittings.

ROAD GRAVEL—**Galesburg, Ill.**—Nov. 5, by Salem Twp., J. L. Ralston, rd. comr., furnishing 24,000 cu.yd. road gravel, f.o.b. Yates City, No. 3, No. 4 or pit run. $30,000. A. R. Smith, Yates City, engr.

†HAND DRILLS, WINCHES, COIL SPRINGS, etc.—**Boston, Mass.**—Nov. 5, by Supply Officer, Navy Yard, Boston, furnishing 420 pieces hand drills, Schedule 6245; Nov. 8, electric winches, coil springs, plate glass, 150,000 lb. American hemp, Schedule 6292; cotton and flax twine, Schedule 6293; steel forgings, Schedule 5930, all for Boston Navy Yard.

GRADER—**Red Wing, Minn.**—Nov. 5, by C. T. Taylor, aud., Goodhue Co., one 12 ft. blade grader, leaning wheels, hydraulic power control, weight 12,000 lb.

†PIPE, etc.—**Boulder City, Nev.**—Nov. 7, by Bureau Reclamation, Denver, Colo., pipe, valves, fitting and appurtenances, for installing in Boulder City Water Supply System, Boulder Canyon Project. R. F. Walter, Custom House, Denver, Colo., dist. engr.

†WIRE and CABLE—**Brooklyn, N. Y.**—Nov. 22, by Signal Corps., Army Base, 58th St. and 1st Ave., 889,800 lin.ft. wire, and 45,000 lin.ft. cable.

†SNOW PLOWS—**Fort Jay, N. Y.**—Nov. 7, by Purchasing Officer, Governors Island, 1 way snow plow for three 5 ton trucks; one leveling wing and single blade 1 way plow, for 1½ ton truck, for Governers Island.

AIR COMPRESSOR—**New York, N. Y.**—Nov. 4, by R. Forbes, comr. Municipal Bldg., portable air compressor to Dpt. Plant and Structures.

STREET SIGNS—**New York, N. Y.**—Nov. 6, by R. Forbes, comr., Municipal Bldg., New York, furnishing, delivering street sign frames, to President of Bronx Boro.

TRUCKS—**New York, N. Y.**—Nov. 7, by S. S. Goldwater, comr. Dpt. Hospitals, Municipal Bldg., trucks, motor driven, at Queens General Hospital, 165th St. and Grand Central Blvd.

†BUOYS—**St. George, N. Y.**—Nov. [illegible] by Superintendent Lighthouses, St. George, 18 steel gas buoys with towers and counterweights; 18 steel gas buoys with skeleton lantern towers and counterweights.

†BUOYS—**St. George, N. Y.**—Nov. [illegible] by Superintendent Lighthouses, 2 whistle buoys, 5 gong buoys, 24 unlighted buoys with counterweights.

†TANK—**Carlisle Barracks, Pa.**—Nov. 9, by Con. Q. M., one 200,000 gal. elevated steel tank.

ROAD MACHINERY—**Rusk, Tex.**—Nov. 8, by Cherokee Co., c/o F. Devereux, judge, 2 hydraulic power control motor graders with 12 ft. blade.

TURBINE—**Winnipeg, Man.**—Nov. 12, by Chairman Comn. P. Utilities, supplying, erecting 1 hydraulic turbine and one 10,000 kva. generator, for City's hydro-electric system.

SCRAP WROUGHT IRON, etc. — **St. John, N. B.**—Eastern Co., 35 South Wharf, in market considerable quantity of scrap wrought iron and steel, also pipes and boiler tubes.

CONTRACTS AWARDED

†COPPER STRIPS, etc.—**Los Angeles**, Calif.—U. S. Eng., 751 South Figueroa St., furnishing copper strips, for water stops in concrete conduit, to E. Brown, 300 East 9th St., $9,845. Bids Sept. 12, awarded Oct. 18.

COPPER WIRE—**Los Angeles, Calif.**—D. P. Nicklin, purch. agt. Dpt. Water & Power, 207 South Bway., furnishing miscellaneous medium hard drawn triple braid weatherproof insulated copper wire, 24,000 lbs. No. 0, 7 strand, 25,000 lbs. No. 6 AWG, 1 strand, 45,000 lbs. No. 4 AWG, 1 strand, 28,000 AWG, 1 strand, Spec. 1796, to Nehring Electric Wks., De Kalb, Ill., c/o J. G. Pomeroy Co., 823 East 3rd St., Los Angeles, $20,245. Bids Oct. 9, awarded Oct. 22.

†PORTLAND CEMENT—**Los Angeles,** Calif.—U. S. Eng., 751 South Figueroa St., 60,000 bbl. portland cement, in paper bags, f.o.b. Ballona Creek, Culver City and West Los Angeles, to Southwestern Portland Cement Co., 727 West 7th St., $96,000. Bids Sept. 10, awarded Oct. 18. Noted Sept. 23, C. D.

†POWER CRANES—**Los Angeles,** Calif.—U. S. Eng., 751 South Figueroa St., 2 Diesel engine driven crawler type power cranes, to Brown-Bevis Equipment Co., 490 Sante Fe Ave., $11,400. Bids Oct. 3, awarded Oct. 18. Noted Oct. 1, C. D.

†SHOVELS—**Los Angeles, Calif.**—U. S. Eng., 751 South Figueroa St., 2 diesel engine driven crawler type shovels, 2 cu.yd. f.o.b. Los Angeles, to Harnischfeger Sales Corp., 2220 Santa Fe Ave., $21,813. Bids Oct. 3, C. D.—awarded Oct. 18. Noted Oct. 23, C. D.

COPPER TUBING—**Oakland, Calif.**—J. H. Kimball, secy. East Bay Municipal Utility Dist., 512 16th St., 50,000 lin.ft. ¾ in. seamless copper tubing, Bid LS 156, to Utilities Supply Co., 1860 East 15th St., Los Angeles, $5,875. Bids Oct. 9, awarded Oct. 21. Noted Sept. 30, C. D.

WATER METERS — **Oakland, Calif.** — J. H. Kimball, secy. East Bay Municipality Utility Dist., 512 East 16th St., furnishing 2,000 water meters. Bids L. S. 157, to Neptune Meter Co., 320 Market St., San Francisco, $14,840. Bids Oct. 2, awarded Oct. 21. Noted Oct. 14, C. D.

SWITCH GEAR—**Pasadena, Calif.**—City, B. F. De Lanty, genl. mgr., Municipal Life Dpt., City Hall, furnishing, delivering 1 metal clad switch gear for Maryland sub-station, to Allis-Chalmers Mfg. Co., 458 South Spring St., Los Angeles, $52,022. Bids Oct. 10, awarded Oct. 15. Noted Oct. 21, C. D.—Oct. 10, E. N.-R.

FILTER UNIT—**Chicago, Ill.**—Dpt. P. Wks., City Hall, designing, furnishing 1 complete filter unit for Bureau Engineering, to Oliver United Filter, Inc., 221 South LaSalle St., $1,060. Bids Sept. 28, awarded Oct. 21.

FLASHING SIGNALS—**Chicago, Ill.**—Dpt. P. Wks., City Hall, furnishing, delivering 14 automatic 5.25 volt curb flashing signals for Bureau of Streets, to Welsback Traffic Signal Co., 122 South Michigan Ave., $1,610. Bids Oct. 9, awarded Oct. 21.

STEEL PIPE—**Chicago, Ill.**—Dpt. P. Wks., City Hall, 20,000 lin.ft. 2½ in. standard steel pipe for Dpts. Street & Electricity, to Miller Supply Co., 2100 South Sawyer Ave., $4,509. Bids Aug. 1. Noted July 30, C. D.

ROAD GRAVEL—**Galesburg, Ill.**—State Rd. Com., 3,000 cu.yd. 4 road gravel, f.o.b. Galesburg, to McGrath Stone & Gravel Co., Lincoln, Ill., $1.06 per cu.yd. Est. $5,000. Noted Oct. 8, C. D.

CREOSOTED YELLOW PINE PILING—**Sidney, Ia.**—Franklin Co., E. E. Cowden, aud., 4,189 lin.ft. creosoted yellow pine piling, to National Bridge Materials Co., 713 Union State

†*Federal Government.*

Materials, etc. (Continued)

Bank **Bldg.**, **Omaha, Neb.**, **$2,216.** **Awarded** Oct. **11.**

CAST IRON WATER PIPE, etc.—**Westboro, Mass.**—Commonwealth of Massachusetts, Dpt. Mental Diseases, State House, Boston, c.i. water pipe in connection with work at nurses home, to R. Zoppo, 44 Ramsdell Ave., Roslindale, $250; primary electric service, to Garvey Electric Co., 92 Warren St., Fall River, $500. **P.W.A.** Bids Sept. 9, awarded Oct. 22. Noted Aug. 26, C. D.

†DRAGLINE EXCAVATING MACHINES, etc. —**St. Louis, Mo.**—U. S. Eng., Custom House, leasing and operating dragline excavating machines, 20 dump trucks and 1 crawler type tractor, for use in rebuilding portion of back levee of Clear Creek Drainage & Levee Dist., Union and Alexander Counties, to F. L. Abernathy, Lake Cormorant, Miss., $27,120; 7,500 tons stone and crushed stone for use along Mississippi River, to Arnold Stone Co., Cape Girardeau, $7,500, f.o.b. St. Genevieve. Bids Sept. 23 and 26. Noted Sept. 24, C. D.

†BRASS WELL HOUSINGS—**Fort Peck, Mont.**—U. S. Eng., Postal Telegraph Bldg., Kansas City, Mo., furnishing 8 brass well housings, complete for by-pass valve stems, to Prier Brass Mfg. Co., 15th and Blue River Sts., Kansas City, Mo., $11,800. Est. $13,000. Bids Oct. 11, awarded Oct. 16.

†RUBBER SIDE SEALS—**Fort Peck, Mont.**—U. S. Eng., 707 Postal Telegraph Bldg., St. Louis, Mo., furnishing, delivering 32 rubber side seals for spillway gates for Fort Peck Dam, and delivering mould required for production of the seals, to Continental Rubber Wks., Erie, Pa., $1,979. Est. $2,500. Bids Oct. 15, awarded Oct. 17. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

DIESEL TRACTOR, etc. — **Fallon, Nev.** — Churchill Co., 1 caterpillar diesel 50 tractor; and 1 No. 66 caterpillar grader with 12 ft. blade, to Collier Tractor Co., Reno, $6,548. Bids Oct. 12, awarded Oct. 12. Noted Sept. 25, C. D.—Oct. 3, E. N.-R.

†NEEDLE VALVES—**Boulder City, Nev.**—Bureau Reclamation, furnishing twelve 72 in. diam. internal differential needle valves for installing in tunnel plug outlet works at Boulder Dam, to Thomas Spacing Machine Co., Glenshaw St., Pittsburgh, Pa., $214,000. Bids June 5, awarded Oct. 16.

†RADIAL GATE HOISTS—**Boulder City, Nev.**—Bureau Reclamation, Denver, Colo., 5 power-driven double drum radial gate hoists with one portable gasoline engine drive unit; and four 3 ft. 6 in. x 3 ft. 6 in. high pressure gates with frames, hoists, and semi-automatic gate hangars, hydraulic gate hangers, conduit linings and conduit lining transitions for installing in spillway and outlet works of Rye Patch Dam, Humboldt Project, Item 1, to Western Fdry Co., 2400 Southwest Hood St., Portland, Ore.; Item 2, to Commercial Iron Wks., 412 Southeast Stephens St., Portland, Ore. Bids Aug. 28.

CAST IRON PIPE, etc.—**Concord, N. H.**—City Water Comrs., City Hall, centrifugal c.i. cement lined pipe, to U. S. Cast Iron Pipe & Fdry. Co., 250 Stuart St., Boston, **Mass.*****special fittings and gate curb boxes, to Builders Iron Fdry., 9 Codding St., Providence, R. I. ***hydrants, to Ludlow Valve Mfg. Co., 73 Tremont St., Boston, **Mass.*****valves, to Rensselaer Valve Co., Northboro, **Mass.*****joint compound and jute packing, to Page Belting Co., **East** Penacook, N. H. Bids Sept. 12, awarded about Oct. 17. Noted Sept. 11, C. D. —Sept. 19, E. N.-R.

ROAD MATERIALS—**New Brunswick, N. J.** Bd. Freeholders Middlesex Co., awarded contract 218,094 gal. tar X and 25,557 gal. tar A, to Tar Asphalt Service, New Brunswick, 10.8c. per gal.***13,861 bags portland cement and 101,500 brick, to P. M. Welsh Co., 334 Handy St., New Brunswick, 65c. per bag and $17 per 1,000, respectively***1,319 tons sand, to Dallenbach Sand Co., Milltown, $1.10 per ton*** 1,852 tons ¾ in., 11,569 tons 2½ in. and 45 tons 3 in. crushed stone, to Bound Brook Crushed Stone Co., Bound Brook, $2 per ton for ¾ in. and $1.50 for other sizes.

STONE—**Trenton, N. J.**—State House Comn., 800 tons dressed stone to be used at State Hospital, to DeFlesco Bros., Wilburtha, $4.50 per ton.

PIPE—**Colonie, N. Y.**—Village, 100 tons c.i. water pipe, to U. S. Pipe & Fdry. Co., Burlington, N. J.

STONE—**Solvay, N. Y.**—**City of Syracuse,** R. D. Marvin, mayor, City Hall, 2,000 tons crushed stone for use at Amboy Airport, here, to General Crushed Stone Co., Union Bldg., Syracuse, $2,700. Awarded Oct. 17.

†CEMENT LINED PIPE—**New York, N. Y.**—Treas. Dpt., Procurement Div., 1,300 tons cement lined cast iron pipe, to U. S. Pipe & Fdry. Co., Burlington, N. J.; 300 tons same, to Donaldson Iron Wks., Emaus, Pa.

†*Federal Government.*

MOTOR GRADERS, etc.—**Raleigh, N. C.**—Division Purch. & Contr., A. S. Brower, dir., 10 motor graders, to Carolina Tractor & Equipment Co., Salisbury, $20,940***10 motor graders and 1,000 road machine blades, to North Carolina Equipment Co., 3116 Hillsboro St., $19,450 and $1,808 respectively***1 jack hammer, to E. F. Craven, Greensboro, $190***11,250 lb. structural steel and 17,760 lb. structural and 1,002 lb. reinforcing steel, to Salem Steel Co., Winston Salem, $371 and $614 respectively***5,000 gal. aluminum vehicle, to Sherwin Williams Co., Delaware Ave. and Chestnut Sts., Phila., Pa., $4,400. Grand total $47,773. Bids Oct. 10. Noted Oct. 7, C. D.

†STEEL—**Cleveland, O.**—Federal Emergency Relief Administration, 150 tons reinforcing steel for various projects, to Patterson-Leitch Co., 900 East 69th St. Est. about $7,500.

SNOW FENCE, etc.—**Winnebago, Wis.**—Winnebago Co., 30,000 ft. lath snow fence and 3,000 posts, to Wheeler-Arnold Co., Wittenberg, $1,770 and $840 respectively.

PUMP and MOTOR—**Marion, Wis.**—L. M. DeVaud, village clk., deep well turbine pump and motor, to Layne-Northwest Co., 1029 West Wells St., Milwaukee. Noted Sept. 3, C. D.

PUMPS—**Milwaukee, Wis.**—City, furnishing 2 motor-driven centrifugal pumps for water purification plant, to Allis-Chalmers Mfg. Co., 1126 South 70th St., $98,571. **P.W.A.** Noted Sept. 13, C. D.

†PUMPS—**Milwaukee, Wis.**—U. S. Forest Service, 500 back pack pumps, f.o.b. Utica, N. Y., to Hunter Tractor & Mchy. Co., 327 South 16th St., $3,060. Bids Oct. 7, awarded Oct. 21. Noted Oct. 4, C. D.

TRUCKS, etc.—**Winnebago, Wis.**—Winnebago Co., awarded contract furnishing two 5 ton trucks, to Oshkosh Motors, Inc., Oshkosh, $15,150***1 blade plow, to Hunter Tractor & Mchy. Co., 327 South 16th St., Milwaukee, $585***1 plow, to Bork River Bridge & Culvert Co., Eau Claire, $1,350. Grand total $17,085.

FOREIGN

Argentina—Corporation, c/o St. Louis Smelting & Refining Co., Collinsville, Ill., plans constructing smelter in Chaco Territory. To exceed $50,000. Large quantity of equipment will be transferred from present smelter at Collinsville, Ill.

Bermuda, Hamilton—Municipality (1st unit) airport development, to G. H. Burland, Hamilton. Est. exceeds **$500,000.**

Bolivia—Holchschild Co., M. Hochschild, pres., LaPaz, or c/o Watson Geach & Co., 70 Pine St., plans constructing tin smelter. $500,000 or more. **Maturity indefinite.**

England—Aircraft Industries Corp., Ltd., M. Brabazzon, mgr., **London,** preparing plans aircraft engine manufacturing, $750,000*** Chinese Government Purchasing Comn., c/o Fox & Mayo, 155 Dashwood House, Old Broad St., **London,** in market for steel sections and plates for buildings***T. R. Wynne, Bengal-Nagpur Railway Co., 132 Gresham House, Old Broad St., **London,** in market 800 steel tires for coaches and cars, also 4,350 drawbars; Metropolitan Water Bd., **London,** voted $6,195,000 for constructing storage reservoir at Staines*****Birmingham** Municipality, supply and erection 50,000 kw. alternator, to C. A. Parson & Co., Ltd., Heaton, Newcastle-on-Tyne, $650,000*** Nov. 15, by Electric Comn. of Manchester Corp., H. C. Lamb, eng., **Manchester,** for building work, steel works, etc., in connection with extension to turbine, boilers, switchboards, at Barton Power Station*****Liverpool Municipality** preparing plans duplicating Clarence Dock Power Station $1,500,000*****Nottingham** Municipality preparing plans constructing 2,000 homes at Bestwood Estate House, $3,500,000 *****Leeds** Municipality preparing plans constructing Central Bath on New York Rd., $600,000*****Sheffield** Municipality plans 316 houses on Shirecliffe Estate, $625,000***Derwood Valley Water Bd., **Bamford,** constructing reservoir, to Richard Baillie, Pencaitland, Scotland, $3,500,000***Star Brewery, **Bournemouth,** plans extensive reconstructions and extensions.

England—Blackburn Municipality purchases 253 acre site at Samberbury for aerodrome*** Ericsson Telephones Ltd., **Beeston,** plans by Brombley Cartright & MacNulty, Prudential Bldg., Nottingham, constructing factory, $600,000***F. T. Dear, **Chard,** preparing plans new plant for United Dairy Ltd.***Scottish Ores Ltd., **Grangemouth,** plans large extension***Montague Burton Ltd., **Leeds,** preparing plans factory and workmens' homes, $1,500,000***F. F. Kirby Ltd., Church St., **Market Harborough,** plans by Coales & Green, 36 High St., constructing new works***Oxford, Pressed Steel Co. of Great Britain Ltd., constructing plant extension, to T. H. Kingerlee & Sons Ltd., Queen St.*** Tambyn & Son Ltd., 54 High St., **Bridgewater,** plans 300 houses, $600,000***Alvis Car & Eng. Co. Ltd., Holyhead Rd., **Coventry,** plans extension $700,000***Gainsborough, T. Tatan, archt., 32 Caskgate St., constructing flour mill and equipment, to Bernard Pumphrey Ltd., Gainesborough, for Whittons Flour Millers Ltd., $665,000***W. Crossland Ltd., **Bredbury,** factory, to R. B. Key Ltd., Hyde Park, Woodley, $500,000 ***W. G. Armstrong-Whiteworth Aircraft Ltd., **Baginton,** plans plant, $1,000,000*** Suburban Building Co. Ltd., **Cheadle,** preparing plans 400 houses, $820,000***Cramlington Estate Ltd., **Cramlington,** preparing plans 620 homes, $1,110,000***Urban District Council, **Eston,** plans by F. Tummell, Cleveland House, Grangetown, 340 homes, $705,000.

England—Salford Town Council erecting 292 flats, to Williams Gorwall & Son, Ltd., $740,000 ***Notts County Council, **Dunham,** preparing plans bridge over River Trent, $1,000,000*** Notts County Council, **Colurck,** preparing plans bridge over River Trent, $750,000***Notts County Council, **Nottingham,** voted $3,200,000 for repairs and reconstructing various bridges in county***Worcester City Council, purchased site for aerdrome, **Perdiswell*******Leeds** Corporation constructing Kirkstone Power Station Building, to S. Butler & Co. Ltd., Stanningly, Leeds, $56,945, equipment, to International Combustion Co. Ltd., Leeds, $846,750*** J. H. Shorrocks, Norbeck Hydro Blackpool prepare plans hydro and health center, **Brighton,** $1,250,000 available***T. Konjin, **Sedley Park,** plans by A. E. Lancashire, Albert Bldg., Corporation St., Preston, reconstructing sports center, 1,000,000 available***Yorkshire Council of Agricultural Education, **Askham Bryan,** plans farm institute building, $586,000 voted***East Molesey, Lavender & Farrell Ltd., Worcester Park, Surrey, preparing plans 700 houses, $1,260,000***Sussex Homes Ltd., **Sussex** preparing plans housing development at Hannocks, incl. 1,600 houses and 2.6 mi. paved streets, $5,000,000******Walsall,** Pegret Tove & Mfg. Co. Ltd., 222 Lichfield Rd., Birmingham, purchased site for factory***Price Bros. & Co. Ltd., Smith St., **Wellington,** factory extension, to J. Twyford, Mantle St., Wellington, $536,000*** **Liverpool** Municipality voted $1,250,000 constructing Philharmonic Hall, $1,250,000 voted; abbatoirs addition, $250,000; extending electric power house at Barton, $2,350,000*** Scottish Development Trust, Victoria House, Southampton Row, Bloomsbury, plans by A. E. Sherman, North House, North John St., 312 house development at Salford, **Liverpool,** $622,000.

England — Wyndham Studios Ltd., 60 Wardour St., W. C., **London,** plans film studios on Wyndham Estate, $1,250,000***Guildhall Property Co. Ltd., 80 Grosvenor Pl., S. W., **London,** plans by B. Gray & Partners, Mount St. W., constructing 900 houses at Seaford, $1,750,000***W. T. Development Ltd., 93 Cannon St., E. C., **London,** preparing plans 400 houses at Wallingford, $800,000***E. V. Harris, 29 Great James Sq., S. W., **London,** preparing plans government office in Whitehall, $10,000,000*** Southern Railway Engineering Department, Waterloo Station, **London,** preparing plans reconstructing station at Woking, $980,000*** **London** County Council, awarded 451 houses at Nottingham, to Wilson Lovatt & Son Ltd., Clarence Rd., Wolverhampton, $831,000; and reconstructing North Eastern Hospital, to Leslie & Co. Ltd., St. James House, Kensington Sq. W., $788,930***W. E. Masters, archt., 28 Upper Gloucester Pl., W., **London,** constructing flats, to Prestige & Co. Ltd., 149 Grosvenor Rd., $500,000***Marshall & Tweedy, archts., 9 New Cavendish Sq. W., **London,** constructing building at Bway., to Henry Kent & Co. Ltd., 51 Beacon Rd., Hither Green, S.E., for Timothy Davis Ltd., $1,250,000*** Franco-British Electric Co., 25 Oxford St. W.C., **London,** plans by E. A. Stone & Partners, 20 Berkeley St. W. S., constructing works, $700,000***Prudential Assurance Co., Holloran Bars, W.C., **London,** preparing plans constructing office building, $1,500,000*** Southern Railway, **London,** plans by O. Faber, Romney House, Mansham St., S.W., constructing grain elevator and warehouse, at Wandsworth, $1,000,000***Godfrey Phillips Ltd. plans by B. W. H. Scott, 25 Bedford Row, W.C., **London,** constructing factory building, Commercial Rd., $525,000***C. B. Smith, archt., 2 New Court, W.C., **London,** constructing factory, Virginia Rd., to P. Bilton Ltd., 113 Park St., W.C., for F. R. Shadbolt & Sons Co. Ltd., $503,000***Chisinck Products Ltd., plans by A. H. Scott, 30 Bouverie St., E.C., **London,** plant*** Reynolds Illustrated News Ltd., new printery on Grays Iron Rd., to E. W. S. Building Ltd., Lemon St., **London,** $510,000***Bannister Fletcher, archt., 1 King Bench Walk, E.C., **London,** constructing plant, to Hipps & Hill Co. Ltd., Crown Works, South Lamberth Rd., S.W., for Gillete Industries Ltd., $636,000***P. T. Tubbs, archt., 16 Harpur St., W.C., **London,** plant at Brentford, to E. H. Burgers Ltd., 20 Grosvenor Gardens, for R. B. Pullen & Co., $601,000***British Film Corp. Ltd. plans by G. W. Glover & Partners, Abbey House, Victoria St., for Studio at Beaconfield, $600,000*** Government announces plans for providing work in depressed areas, incl. dock deepening schemes at **Tyneside;** naval depot at **Milford Haven;** bridge over Severr at **Cardiff;** oil from coal plants in **South Wales;** reconstructing at harbor **Whitehaven;** reconstructing harbor **Maryport;** constructing oil from coal plants at **Cumberland,** est. exceeds $1,000,000.

England—Slough Municipality voted $1,377,500 for reconstructing Stone Road Bridge and Canal Bridge***Southern R.R. Co., London, plans reconstructing station, **Surbiton,** $750,000.

Foreign (Continued)

England, Bournmouth—Dec. 1, by F. G. M. Steel Ltd., 67 Southbourne Green, West Southbourne, castings (grey iron), milled spindles, die cast in alloy and spiral stands.

England, Liverpool—Welling Estate Ltd., L. G. Leanse, London, plans constructing housing project. To exceed $500,000.

England, Manchester—Welling Estate Ltd., L. George Leanse, London, plans housing project. $500,000.

India—Electrical Supply Corporation, **Cawnpore,** supplying 2 multiple drum boilers, pulverizing plant and electriostste flue gas cleaning plant, to Siomon Carves Ltd., Stockport, England***Director of Contracts, Army Headquarters, **Simla,** in market for 103,500 cells inert O and S type.

India, Bombay—Devi Dayal & Sons, Kalbadevi Rd., in market for brass and copper sheets and circles.

Mexico, Matamoros — Government, c/o P. Wks. Dpt., Francisco Mujica, c/o Dpt. Eng., Mexico City, flood control program along Rio Grande River, each direction from here, incl. straightening river, channel, deepening, widening, necessary levees, by day labor. Will purchase materials and machinery. Interested manufacturers, dealers and contractors should communicate with owner at once. 1,800,000 pesos.

Scotland—Carrick Milling & Chemical Co. Ltd., **Ayr,** purchase site for plant***Councellor W. C. Davidson, Stirling, taking bids constructing 2,000 homes for Public Health Committee, $5,000,000.

Scotland — Governors of Royal Infirmary, **Edinburgh,** constructing nurses' home, to I. Miller & Sons, Ltd., Miller Rd., Edinburgh, $505,000***J. O. Thompson, archt., 1212 Bell St., **Glasgow,** awarded contract factory extension Cogan St., to MacLellan Ltd., Glasgow, for Donaldson & Filer Ltd., $600,000***Scottish Co-Operative Wholesale Society, **Stranaar,** plans reconstructing creameries at Stranaar and at Coatbridge, $450,000***Scottish Oils Ltd., **Grangemouth,** preparing plans refinery addition, $700,000.

Scotland, Edinburgh—Municipality preparing plans constructing and equipping Benzole, recovery plant at Granton.

South Africa—African Consolidated Theatres, Inc., **Durban,** preparing plans 8 story, steel, stone theatre and office building, $550,000*** Natal University College Council, **Durban,** preparing plans fine arts and commerce building *****Livingston,** Municipality preparing plans hydro-electric development at Silent Pool, Victoria Falls, $1,000,000*****Pretoria** Syndicate in conjunction with Union Government plans erecting plant for manufacturing aeroplane, lorry and light car engines, $700,000*****Springs** Municipality preparing plans constructing sewerage scheme, incl. 150 mi. pipe and 2 outfall sewers, $1,000,000*****Durban** Highway Comn. voted $1,600,000 for various roads.

South Africa — Bechuanaland Protectorate-Colonial Development Bd., London, England, preparing plans irrigation scheme, using waters of Okarango River. $10,000,000.

South Africa—Union Government, **Pretoria,** supplying 74 in. reflector telescope to Sir Howard Grubb, Parsons & Co., Ltd., Newcastle-upon-Tyne, England, $120,000***Rand Water Bd., **Johannesburg,** supplying water valves, to J. Blakeborough & Son, Ltd., Brighouse, England, $60,000.

Wales—Pontrhondda District Comrs. authorized special areas to construct sewers, $520,-000*****Abertiltery,** Urban Council plans changing electric system of entire town from overhead to underground conduit system; modernizing gas plant and installing gas holder, mechanic shovel and carbonizing plant.

PUBLIC BUILDINGS

PROPOSED WORK

Ala., Hamilton—Marion Co. Bd. Educ. plans by E. B. Vankeuren, Inc., Farley Bldg., Birmingham, and soon takes bids one new school and addition to present school. $241,000. P.W.A. project.

†Ala., Ozark—Treas. Dpt. at office Sup. Archt., Wash., D. C., plans post office, Reynolds St. and Murch Ave. Site selected.

★ **Ariz., Tucson**—University of Arizona, bids about Dec. 1, constructing science building, auditorium, administration, stables and infirmary buildings. $815,000 allotted by P.W.A. R. Place, 116 Pennington St., archt.

Calif., Alhambra—Alhambra Bd. Educ. voted $163,360 bonds, constructing elementary schools. J. W. Smart, 39 East Main St., archt. Noted July 5, C. D.—July 11, E. N.-R.

Calif., Bakersfield — Bakersfield Union High School Dist., plans being completed by C. Biggar, Haberfelde Bldg., fireproof additions to high school plant, 2nd story addition to agriculture building, additional classrooms, shop building, etc. $150,000.

Calif., Lomita—Bd. Educ., Chamber of Commerce Bldg., Los Angeles, plans by A. C. Martin, 233 Higgins Bldg., Los Angeles, new school building at Nathaniel Narbonne High School, 25423 Redondo-Wilmington Blvd. $110,000.

★ **Calif., National City** — Sweetwater Union High School Dist., election Nov. 4, $330,000 bonds as district's share of cost of erecting new school buildings and improving existing buildings. $600,000. P.W.A. grant and loan made.

Calif., Piedmont — Piedmont Elementary School Dist. plans by J. J. Donovan, 950 Parker St., Berkeley, three 1 story, frame, stucco schools, $30,000 each; plans completed by W. H. Weeks, 525 Market St., San Francisco, 1 story, rein.-con. 8 classroom unit for Piedmont Union High School Dist. $60,000.

Calif., Reedley—Reedley Joint Union High School Dist., sketches by C. H. Franklin, Patterson Bldg., Fresno, Junior College, rein.-con., steel. $115,000.

Calif., San Francisco—City and San Francisco Co. plans by C. Sawyer, city archt., City Hall, steel, brick and terra cotta gymnasium, Frederick and Willard Sts. $145,000. H. C. Vensano, 251 Kearney St., engr.

Calif., San Francisco—City and San Francisco Co. plans by R. Reidy, 821 Market St., 8 room addition to Aptos High School, $99,304; plans by C. Sawyer, city archt., City Hall, auditorium at Daniel Webster School, $33,275.

Calif., San Francisco—City and San Francisco Co. plans being completed by G. Kelham, 315 Montgomery St., W. P. Day, Financial Center Bldg., and J. Bakewell, Jr., 251 Kearney St., rein.-con., steel machine shops, Fillmore and Bay Sts. $233,800.

Calif., San Francisco—City and San Francisco Co., plans being completed by Miller & Pflueger, 580 Market St., 3 story, rein.-con. machine shops for George Washington School. $219,584.

Calif., Tulare—Tulare High School Dist. plans being completed by W. D. Coates, Rowell Bldg., Fresno, 2 classroom units, rebuilding gymnasium and constructing central heating plant. $240,000. Noted Aug. 9, C. D. — Aug. 15, E. N.-R.

Calif., Tulare—City plans by W. D. Coates, Rowell Bldg., Fresno, city hall, $80,000 and memorial building, $35,000.

Calif., Whittier—City plans special election Nov. 26, to vote $370,000 bonds to assist in financing construction of municipal light plant. Est. $662,000. P.W.A. approved $292,000 grant. D. E. Allen, city clk.

Colo., Delta—City Council plans construction of electric power plant. $196,000. Allotment granted subject to charter amendment to qualify to be voted on Nov. 5. C. E. Thomas, 230 Wilda Bldg., Denver, engr. Noted Dec. 28, 1933, C. D.—Jan. 4, 1934, E. N.-R.

†Conn., Glastonbury — Treas. Dpt. at office Sup. Archt., Wash., D. C., plans constructing brick, stone post office, Hebron Ave. and Main St. $500,000. Site selected.

Conn., New London — City, Bd. Educ., sketches by Payne & Keefe, 231 State St., 2 story, basement, brick, steel technical high school addition, Waller St. $160,000. P.W.A. project.

†Conn., Norwalk—U. S. Procurement Div. P. Wks. Branch, Wash., D. C., plans constructing brick, stone post office, Cross and Wall Sts. $300,000. Site selected. Private plans.

Conn., Suffield—Town, School Bd., plans by Towner & Sellew Associates, Inc., 388 Main St., Middletown, brick, steel high school. $161,000. P.W.A. allocated $72,450 grant. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Conn., Thomaston — Town, Bd. Selectmen, Town Hall, plans by Towner & Sellew, 3220 Main St., Middletown, 2 story, basement, brick, steel high school. $177,585. P.W.A. grant $79,913. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

Conn., West Hartford (br. Hartford)—Town, R. L. Loomis, mgr., plans by E. R. Coburn, West Hartford, 2 story, 65x200 ft., two 64 ft. wings, marble, brick town hall. $315,000. P.W.A. project grant $141,300.

†Conn., West Haven—Treas. Dpt. at office Sup. Archt., Wash., D. C., plans constructing U. S. Post Office, Campbell Ave. $65,000. Site acquired.

Conn., Windsor Locks—Town, Bd. Selectmen, 7 Main St., plans by E. Sibley, Litchfield, brick, steel school, Church St. $145,000. P.W.A. allocated $65,250 grant. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

†Conn., Winsted—Treas. Dpt. at office Sup. Archt., Wash., D. C., plans brick, stone post office, Main St. $50,000. Site selected.

Ga., Gainesville—Hall Co., c/o Hall County Bd. Comrs., plans by W. J. J. Chase, 140 Peachtree St., Atlanta, altering and constructing brick, steel, rein.-con. additions to present court house. P.W.A. approved application for $180,000.

Ga., Milledgeville—State Bd. of Eleemosynary Institution, Capitol Bldg., Atlanta, plans heating and light plant for state farm, incl. steam boilers, generating plant distribution lines, steam and power. $350,000. Conner Turley, c/o Lindale Mills, Lindale, engr.

Ill., Belleville—Bd. Supervs. St. Clair Co. defeated $172,000 bonds, constructing rein.-con., brick, stone county jail. $241,000. P.W.A. allotted $69,000 grant. Noted Sept. 9, C. D.—Sept. 12, E. N.-R.

★ **Ill., Chicago**—Bd. Educ., 228 North LaSalle St., sketches altering and rehabilitating 258 schools. $699,314. $603,407 W.P.A. funds allotted. J. C. Christensen, 228 North LaSalle St., engr.

Ill., Chicago—State, Dpt. P. Wks. & Buildings, Springfield, plans by C. H. Hammond, 160 North LaSalle St., constructing 3 hospital cottages at State Educational & Research Hospital grounds, 1819 West Polk St. $153,144. P.W.A. funds granted.

Ill., Chicago—State, Dpt. P. Wks. & Buildings, Springfield, sketches by G. H. Hammond, c/o owner, and takes bids early in November, constructing 3 story hospital, Irving Parkway Blvd. $503,144. P.W.A. grant of $226,344.

Ill., East Moline—State, Dpt. P. Wks. & Buildings, Springfield, plans by C. H. Hammond, Springfield, and takes bids about Nov. 15, constructing 3 story, basement hospital. $203,144. P.W.A. funds of $91,344 granted.

Ill., Joliet—Bd. Supervs. Will Co., sketches by H. W. Tomlinson, 611 Morris Bldg., 4 story, basement jail, Chicago and Jefferson Sts. $365,-000. Applied for P.W.A. funds. Noted July 26, C. D.—Aug. 1, E. N.-R.

Ill., Springfield — City, F. T. Vasey, supt. Schools, election Nov. 12, to vote bonds, constructing school building and repair program. $400,000.

Ind., Kokomo — Bd. Comrs. Howard Co., sketches approved and plans being prepared by O. Cook, Kokomo, constructing 3 story, basement, 100x150 ft., rein.-con., structural steel court house. $351,000. P.W.A. project. Noted May 20, C. D.—May 23, E. N.-R.

Ia., Waverly—Municipality plans diesel electric power plant. $115,000. H. R. Green, 417 1st Ave. S. E., Cedar Rapids, engr.

Kansas—Bd. Educ., Dist. 6, c/o J. W. Radotinsky, archt., 702 Commercial Bank Bldg., Kansas City, election Nov. 7, rein.-con. high school unit on State Hy. 50 and Newton Rd., Shawnee Mission. $150,000.

Ky., Danville—City, made application to P.W.A. for $350,000 loan and grant to construct municipal light and power plant.

Ky., Ft. Mitchell—Kenton Co. Bd. Educ., Covington, plans by H. McClorey, 123 East 6th St., Cincinnati, O., and soon takes bids school. To exceed $100,000.

Mass., Boston—City, Public Welfare Dpt., J. A. McMurrey, chn., 43 Hawkins St., plans by J. G. McGann, 129 Newbury St., Boston, 2 story, basement, brick, steel public welfare buildings, concrete founds., 1 at City Proper, P.W.A. Docket 1314, $55,000, grant $24,750; Northampton St., P.W.A. Docket 1315, $54,-800, grant $24,660; Hancock St. in Dorchester, P.W.A. Docket 1279, $56,000, grant $22,500.

Mich., Greenville—Bd. Educ. plans by Bennett & Straight, 201 Schaefer Bldg., Dearborn, 3 story, 65x240 ft., brick, rein.-con., steel school, incl. auditorium and shops for wood and machine work, plain found. $150,000. P.W.A. project.

Mass., Revere—City, J. M. O'Brien, mayor, City Hall, plans by I. Richmond, 248 Boylston St., Boston, 3 story, basement, brick, steel addition to Central High School, concrete found., Winthrop Ave. $125,000. P.W.A. grant $56,250.

Mass., Wakefield—Town, W. B. Atwell, supt. Schools, Town Hall, project for high school, Main St., turned down. $362,000. P.W.A. grant $162,900. F. I. Cooper, 47 Winter St., Boston, archt. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

Mass., Westfield—Commonwealth of Massachusetts, Dpt. P. Welfare, State House, Boston, plans by J. M. Gray, 175 High St., Boston, 2 or 3 story, basement, brick addition to men's dormitory, concrete found., at State Sanitorium. To exceed $150,000.

Minn., Faribault—Bd. Educ., E. M. Hutchinson, clk., defeated $165,000 bonds, constructing school addition. $250,000. Project postponed indefinitely. Noted Aug. 14, C. D.—Aug. 22, E. N.-R.

Minn., Harmony—Bd. Educ., G. Todd, clk., plans by Croft & Boerner, 1004 Marquette Ave., Minneapolis, 2 story, basement, rein.-con., brick, steel school. $125,000. P.W.A. allotted $55,648.

Minn., Janesville—Village, G. Schmidt, clk., plans constructing complete electric light and power system, power house, generator equipment, distribution lines, etc. $105,455. P.W.A. allotted $105,455.

★ **Minn., Minneapolis**—City, F. T. Paul, engr., City planning Comn., H. E. Olson, engr., City Hall, plan to develop 120 acre tract on Lyndale Ave. N., and construct 410 dwelling houses, with specially designed streets and alleys, two

†Federal Government

Public Buildings (Continued)

underpasses, playgrounds, shopping centers, etc. $2,000,000. Will apply for F.H.A. funds.

Minn., Northfield—Bd. Educ., C. H. Gingrich, clk., plans by Jacobson & Jacobson, 2515 West Franklin Ave., Minneapolis, constructing 2 story, basement, rein.-con., brick, stone addition to school. $122,000. P.W.A. allotted $54,000.

★ **Mo., Kirksville**—City, A. L. Bartlett, mayor, plans municipal light and power plant system. $640,000. P.W.A. allotted funds. Black & Veatch, 4706 Bway., Kansas City, engrs. Noted Sept. 4, C. D.—Sept. 12, E. N.-R.

Mont., Missoula—State Bd. Educ., E. Ireland, secy., Helena, plans by Hugenin & DeKay, 1201 West Porphyry St., Butte, and 440 Benton St., Helena, constructing armory, at University of Montana. $300,000. P.W.A. funds applied for.

Mont., Sidney—Bd. Educ., C. Imes, clk., plans by McIver & Cohagen, Hedden Bldg., Billings, 2 story, basement school. $121,000. $59,000 allotted by P.W.A.

Neb., Lexington—Dawson Co. plans by H. M. McClure, Kearney, new schools. $120,000. P.W.A. funds allotted.

†Neb., O'Neil — Treas. Dpt. at office Sup. Archt., Wash., D. C., rejected bids July 26, constructing U. S. Post Office. Noted July 31, C. D.—July 11, E. N.-R.

Nev., Las Vegas—City plans municipal power plant. $250,000. Will call bond election of $250,000 to finance project. B. Dibble, Denver, engr.

Nev., Reno—Washoe Co., election about Dec. 7, to vote bonds for constructing rein.-con., brick, steel additions to courthouse. $285,000. F. J. De Longchamps, Gazette Bldg., archt. Noted Mar. 27, C. D.—Apr. 4, E. N.-R.

N. H., Durham—Town, Bd. Selectmen, Town Hall, plans by Huddleston & Hersey, c/o University of New Hampshire, Durham, 2 story, brick, steel, stone school, concrete found. $114,318. P.W.A. project.

N. J., Cartaret—Bd. Educ. plans by A. Merchant & Son, 1 Elm Row, New Brunswick, new high school. $340,000. P.W.A. application.

N. J., Dumont—Bd. Educ. plans by Hacker & Hacker, Main St., Fort Lee, constructing addition to high school, incl. additional classrooms, laboratories, cafeteria, gymnasium and service rooms. $312,000. P.W.A. application.

N. J., Edgewater Park—Bd. Educ. plans by A. Merchant & Son, 1 Elm Row, New Brunswick, constructing elementary school. $115,000. P.W.A. application.

★ **N. J., Glen Rock**—Bd. Educ. plans by Tooker & March, 101 Park Ave., New York, N. Y., constructing Junior-Senior High School, and 4-room addition to central school, incl. equipment. $560,000. P.W.A. application.

★ **N. J., Irvington**—Town, Town Hall, plans by J. T. Briggs, 101 Park Ave., New York, N. Y., new civic center. $638,007. P.W.A. application.

N. J., Linden—City, Trustees of Free Public Library, Library Bldg., plans by C. E. O'Hara, Jr., 9 East 41st St., New York, N. Y., constructing 3 story, basement, fireproof public library incl. auditorium. $116,340. P.W.A. application.

N. J., Milburn—Bd. Educ., A. W. Howe, chn. Building Comn., rejected bids Oct. 4, steel for school, South Mountain Estates. $3,000. Plans being refigured and new bids will be asked. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

N. J., Succasunna—Bd. Educ. plans by W. Slifer, 10 Park Pl., Morristown, new high school and alterations to present high school building. $350,000. P.W.A. application.

N. J., Trenton — State House Comn. soon takes bids altering and rebuilding (1st unit), State Model School into office building. $80,000. C. N. Leathem, State Bldg., archt.

N. M., Raton—Colfax Co. plans by Townes & Funk, Johnson Bldg., Amarillo, Tex., brick, rein.-con. court house. $270,000. P.W.A. funds allotted.

N. Y., Albany—Common Council, City Hall, granted permission to Bd. Contr. to purchase automatic fire alarm system for Schools 6, 15 and 24. J. J. McManus, city engr.

N. Y., Arcade — Bd. Village Trustees approved $80,000 for purchasing and installing Diesel engines to replace steam equipment at municipal light and power plant. $80,000. Maturity at once.

★ **N. Y., Astoria**—Bd. Educ., 500 Park Ave., New York, plans by W. C. Martin, Flatbush Ave. Extension and Concord St., Brooklyn, constructing P. S. 166, 132x178 ft., 35th Ave. and 34th St. $500,000.

†N. Y., Auburn—Treas. Dpt. at office Sup. Archt., Wash., D. C., soon takes bids constructing U. S. Post Office, brick, steel, plain found. $283,000.

N. Y., Avon—Union Free School Dist. 1, bids probably this year, school. $105,000. P.W.A. funds allotted. Bley & Lyman, 505 Delaware Ave., Buffalo, archts. Noted Aug. 12, C. D.—Aug. 15, E. N.-R.

N. Y., Bethany—Bd. Supervs. Genesee Co., County Bldg., Batavia, bids in spring, constructing 2 story, basement, brick, steel, 225x243 ft. county home, plain found. $400,000. F. Homelius, 35 Richmond Ave., Batavia, archt. Noted Aug. 12, C. D.—Aug. 15, E. N.-R.

N. Y., Blossburg—Bd. Educ., J. R. Stratton, secy. School Bd., soon takes bids constructing brick, steel school, plain found., Carpenter and Morris Sts. $108,000. P.W.A. funds allotted.

N. Y., Brooklyn—Dpt. Purchase, Municipal Bldg., New York, plans by F. L. Belknap, 539 East 88th St., New York, 2 story offices and storage, New Dock and Water Sts. $278,000.

N. Y., Brooklyn—Dpt. Purchase, Municipal Bldg., New York, plans by F. L. Belknap, 539 East 88th St., New York, constructing boiler room and heating plant for warehouse and service building, 29 Water St. $30,000 or more.

N. Y., Caledonia—District School, Caledonia, plans by Bley & Lyman, 505 Delaware Ave., Buffalo, 2 story, basement, brick, steel school, plain found. $170,000. Applied for P.W.A. funds.

N. Y., Limestone—Limestone School Dist., bids about Nov. 15, constructing 2 story, brick, steel school. $132,400. $80,000 bonds voted. $52,400 P.W.A. grant approved. R. A. Freeburg, 1105 West 3rd St., Jamestown, engr. and archt. Noted Oct 18, C. D.—Aug. 1, E. N.-R.

N. Y., Lockport—Bd. Supervs. Niagara Co., plans hospital for adult patients, at tuberculosis sanitarium. $500,000. Architect and engineer not appointed.

N. Y., Lockport—Bd. Commerce received report from P. J. Loftus Eng. Co., Oliver Bldg., Pittsburgh, that municipal hydro-electric plant will cost $375,000 in excess of $1,800,000 claimed by supporters of project. Noted June 27, C. D.—July 11, E. N.-R.

N. Y., Morrisville—Central School Bd. plans by C. W. Clark, 27 North Main St., Cortland, constructing school. $172,000. A. R. Acheson, Eckel Theatre Bldg., Syracuse, heating, ventilating and electrical engr. E. McCarthy, 411 South West St., plumbing engr. Applied for P.W.A. funds. Noted Sept. 19, C. D.—Sept. 26, E. N.-R.

N. Y., New York—City, F. H. LaGuardia, mayor, enjoined by Court of Appeals from holding referendum Nov. 5, constructing municipal power plant. $45,000,000. Noted Sept. 4, C. D.—Sept. 12, E. N.-R.

N. Y., New York—Dpt. Parks, Central Park, Arsenal Bldg., plans by A. Embury, c/o owner, 2 story, 224x281 ft. shop and garage and administration, Unionport Rd. and Bronx Park. $475,000.

N. Y., North Creek—Union Free School Dist., C. S. Wade, pres., plans by J. R. White, 109 State St., Albany, constructing school. Will not use P.W.A. funds. Noted Sept. 30, C. D. —Oct. 3, E. N.-R.

N. Y., Olmsteadville—Central School Dist. 1, plans by C. W. Clark, 27 North Main St., Cortland, constructing school. $112,000. A. R. Acheson, Eckel Bldg., Syracuse, heating, ventilating and electrical engr. E. J. McCarthy, 411 South West St., Syracuse, plumbing engr. Bids about Nov. 2, on demolition, excavating, rough grading and constructing sewage disposal. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

N. Y., Rome—Oneida Co. Hospital plans by H. G. Rice, engr. and archt., 112 West Dominick St., 2 story, basement, 38x242 ft. hospital, Floyd Ave. $160,000. P.W.A. funds allotted.

N. Y., Salamanca — Commission of Educ., C. A. Miller, chn., plans by O. S. Johnson, 610 Fenton Bldg., Jamestown, brick, steel school, plain found., $180,000. P.W.A. funds allotted. Noted Sept. 24, C. D.—Sept. 26, E. N.-R.

N. Y., Theresa—Union Free School Dist. 1, plans nearing completion by D. K. Sargent, 212 Harrison St., brick, steel school, plain found. $125,000. Applied for P.W.A. funds. Noted Apr. 9, C. D.—Apr. 18, E. N.-R.

N. D., San Haven—State Bd. Administration, E. C. Wanner, secy., Capitol, Bismarck, plans by W. F. Kurke, 1117 13th Ave. N., 4 story, 60x170 ft. infirmary and power house extension, State Tuberculosis Sanatorium. $300,000. $135,000 allotted by P.W.A.

O., Burton—Bd. Educ., P. Calvin, clk., plans by H. A. Fulton, 5716 Euclid Ave., Cleveland, 2 story, basement, brick, rein.-con. school, plain found. $120,000. P.W.A. funds allotted. Local bond issue passed.

O., Cleveland—Cleveland Public Library, c/o R. M. Jack, supt. Buildings, 325 Superior Ave., plans being completed by Walker & Weeks, 2341 Hamilton Ave., constructing new 3 story, 60x90 ft. and 2 story, 60x90 ft. top addition to warehouse, 1011 Hamilton Ave. $150,000. P.W.A. grant allotted.

O., Elyria—Bd. Educ., J. F. Brown, bus. mgr., plans by Silsbee & Smith, Elyria Savings & Trust Bldg., 2 story, basement, brick, steel, rein.-con., bar joist addition to Jefferson School. $115,000. Application made to P.W.A. for loan and grant. Bond election Nov. 5, for same.

O., Elyria—City, F. Underhill, dir. P. Serv., plans by Silsbee & Smith, Elyria Savings & Trust Bldg., 3 story, basement city hall and fire station. $230,000. P.W.A. project. Bond election Nov. 5, for same. Noted Sept. 19, C. D.—Sept. 26, E. N.-R.

O., Grafton — Bd. Educ., V. Gandee, clk., plans being completed by W. G. Caldwell, Engineers Bldg., Cleveland, 2 story, basement, 137x190 ft., brick high school. $127,000. P.W.A. allotted $57,330 funds. $70,000 bonds voted. Noted Aug. 7, C. D.—Aug. 15, E. N.-R.

O., Hamilton—Bd. Educ. plans by H. Barkman & F. G. Mueller, Hamilton, 2 story, rein.-con., brick school additions, plain founds., as follows: Pierce School $70,200, Fillmore School $22,910, and Lincoln School $33,900. To be partly financed by W.P.A. funds.

O., Jamestown—Bd. Educ. plans by J. C. Grunkemeyer & C. W. Sullivan, 3717 Eastern Ave., Cincinnati, 2 story each, high school and grade school. $150,000. Noted June 12 and July 12, C. D.—June 20 and July 18, E. N.-R.

O., Lorain—Bd. Educ. plans by Silsbee & Smith, Elyria Savings & Trust Bldg., Cleveland, 2 story, basement, brick, rein.-con. school addition. $112,000. P.W.A. allotted $57,781 grant.

Pa., Banksville — Bd. Educ., Pittsburgh, plans by M. M. Steen, Bd. Educ., Administration Bldg., Pittsburgh, brick, steel school. $170,000. Approved by P.W.A.

Pa., Berlin—School Dist. plans by Hunter & Caldwell, 3601 Fifth Ave., Altoona, school, Somerset Co. $220,000. Approved by P.W.A. Noted June 14, C. D.

Pa., Cecil—Bd. Educ., Cecil Twp., plans by G. W. Brugger, 1st Natl. Bank Bldg., Canonsburg, constructing school, Washington Co. $112,400. Approved by P.W.A.

Pa., Dunbar—Dunbar Twp. School Dist. plans by H. W. Altman, Fayette Title & Trust Bldg., Uniontown, high school addition. $178,182. Approved by P.W.A. Noted Sept. 23, C. D.—Sept. 26, E. N.-R.

Pa., Ellwood City—City plans municipal electric generating plant. $221,182. Approved by P.W.A. R. Husselman, Hippodrome Bldg., Cleveland, O., engr.

Pa., Irwin — Irwin and North Huntington Twp. School Dists., plans by R. J. Brocker, Irwin, joint school building, Westmoreland Co. $138,182. Approved by P.W.A.

Pa., Kane — Bd. Educ. plans by T. K. Hendryx, 100 F Bldg., Bradford, constructing school building. $118,181. Approved by P.W.A. Noted July 31, C. D.—Aug. 8, E. N.-R.

Pa., Muse — School Dist. plans by G. W. Brugger, 1st Natl. Bank Bldg., Canonsburg, constructing and equipment of school building, Washington Co. $112,400. Approved by P.W.A.

Pa., North East—North East Boro School Dist. plans by W. H. Crosby, Beers Bldg., Oil City, grade school. $135,770. Approved by P.W.A.

Pa., Penn Twp. — Bd. Educ., Penn Twp., plans by C. H. Sorber, 1st Natl. Bank Bldg., Greensburg, high school. $176,364. Approved by P.W.A.

Pa., Phillipsburg—School Dist. plans by Hunter & Caldwell, 3601 5th Ave., Altoona, constructing, brick, steel school. $224,792. Approved by P.W.A. Noted Dec. 6, C. D.—Dec. 13, E. N.-R.

Pa., Pittsburgh—Bd. Educ. Plum Twp., plans by J. H. Phillips, 715 Wabash Bldg., brick, steel high school, Plum Twp. $156,364. Approved by P.W.A.

Pa., Pittsburgh—School Dist. West Deer Twp., plans by C. H. Sorber, 1st Natl Bank Bldg., Greensburg, brick, steel high school, West Deer Twp. $220,000. Approved by P.W.A.

Pa., Punxsutawney—School Dist. plans by Russell G. Howard & Associates, Deposit Natl. Bank Bldg., Du Bois, constructing brick, steel high school, incl. equipment. $180,000. Approved by P.W.A.

Pa., Waynesboro—Waynesboro School Dist., Franklin Co., plans by Lawrie & Green, 3rd and Forster St., Harrisburg, brick, steel school. $144,855. Approved by P.W.A.

Pa., Williamsport—City plans by R. D. Steele, 34 West 4th St., constructing gymnasium for school. $237,300. Approved by P.W.A. Noted Aug. 8, C. D.—Aug. 15, E. N.-R.

S. C., Charleston—City, Bd. School Comrs., A. B. Rhett, supt. City Schools, 11 St. Philip St., plans by Simons & Lapham, 42 Broad St., laboratories and classroom additions, enlarging auditorium and gymnasium and general remodeling of Memminger High School for Girls, St. Philip St., $93,708; alfo 12 room addition, heating plant and auditorium at Henry P. Archer Negro School, Cooper St., $88,244. P.W.A. grants approved. Noted Aug. 27, C. D. —Aug. 29, E. N.-R.

S. C., Charleston — The Citadel, Charleston, plans by J. E. Sirrine & Co., archts. and engrs., Greenville, stone chapel, six 2 story, four apartment professor's residences and a kitchen and mess hall to accommodate 850 students, all

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†*Federal Government.*

Public Buildings (Continued)

buildings except chapel will be brick and hollow tile stucco. P.W.A. approved $541,818 loan and grant for project. L. S. Le Tellier, head, Dpt. of Engineering. Noted Aug. 12, C. D.—Aug. 15, E. N.-R., under "Commercial."

S. D., Brookings—Bd. Educ. plans by Perkins & McWayne, 322 Barlton Bldg., Sioux City, 2 story, basement, brick, steel, rein.-con. school. $164,000. P.W.A. funds allotted.

S. D., Mitchell—Bd. Educ., A. B. McKeel, clk., plans by F. F. Kings & W. J. Dixon, Mitchell, 2 story, rein.-con., brick school addition. $133,000. P.W.A. funds allotted.

★ **S. D., Yankton**—Municipality plans electric light and power plant. $600,000. Buell & Winter Eng. Co., Sioux City, Ia., engrs.

Tenn., Nashville—City plans by G. Waller, Independence Life Bldg., Junior High School, Gallatin Rd. $235,000. P.W.A. project.

Tex., Anahuac—Bd. Educ., G. C. Wilcox, pres., plans by A. Babin & B. Irby, Beaumont, brick, rein.-con. public school gymnasium and school, plain found. $125,400. Application filed with P.W.A. for loan and grant.

Tex., Galveston—Bd. Educ. plans by R. R. Rapp, constructing 3 story, part basement, 204x240 ft., rein.-con., brick Junior High School, incl. 25 classrooms, auditorium, gymnasium, mechanical shop, laboratories, etc., $496,500; 2 story, part basement, 59x182 ft. elementary school, incl. 12 classrooms, cafeteria, offices, etc., $185,000; 2 story, basement, 35x146 ft. colored high school. Application filed with P.W.A. for grant only.

Tex., Kilgore—Bd. Educ., c/o E. Chandler, secy., plans by Phelps & De Wees, Gunter Bldg., San Antonio, brick, rein.-con. public school building, auditorium, offices, crafts room, etc., plain found. $200,000. P.W.A. funds allotted.

Tex., Kountze—Hardin Co., A. L. Bellville, judge, plans by N. E. Weideman, Amer. Natl. Bank Bldg., Beaumont, 3 story, court house and 2 story mail, brick, stone, rein.-con., steel, plain founds. $175,000. Application filed with P.W.A. for funds.

Tex., Olton—Olton Ind. School Dist., R. F. Dennis, pres., plans by Voelcker & Dixon, 913½ Indiana Ave., Wichita Falls, constructing 2 story, 81x316 ft., rein.-con., brick public school, incl. 18 classrooms, offices, auditorium, cafeteria, locker rooms, plain found. $135,000. P.W.A. funds allotted. Noted Aug. 8, C. D.—Aug. 15, E. N.-R.

Tex., San Antonio—Bd. Educ., c/o R. S. Menefee, pres., Lavaca and Matagorda Sts., soon takes bids 1-2 story, semi-fireproof Junior High School, Lake, Huisache, Mulberry and Kampmann Blvds. $194,000. P.W.A. project. A. B. and R. M. Ayres, Smith-Young Tower, and Adams & Adams, Insurance Bldg., and Phelps & DeWees, Gunter Bldg., archts. Mathews & Kenan, 1615 Smith-Young Tower Bldg., engrs. This project for which bidding originally cancelled, has been straightened out and advertising for bids authorized by P.W.A. Bd. Exact date closing bids will be set at once. Noted Sept. 6, C. D.—July 18, E. N.-R.

Tex., Waco—Bd. Educ., c/o H. M. Richey, plans by T. Brooks, Pearson, 3 story, part basement, 149x260 ft., brick, rein.-con. Junior High School, library, offices, study hall, etc., concrete pile found. $180,000. P.W.A. funds allotted.

Tex., Weslaco—City, J. C. Compere, Jr., mayor, plans municipal electric light and power plant, motor driven turbines, distributing underground lines, etc. $210,000. Application filed with P.W.A. Bd. for funds. J. E. Ward, Harvey-Snider Bldg., Wichita Falls, engr.

Wash., Medical Lake—State, Olympia, plans by G. Rasque, Spokane Savings Bank Bldg., Spokane, 3 story, basement, 210x226 ft., brick, steel, rein.-con. men's psycopathic ward addition, $326,000; and 3 story, basement, rein.-con. women's ward addition, $129,000, at Eastern State Hospital. P.W.A. project.

Wash., Vancouver—State Hy. Dpt., Olympia, soon takes bids constructing 32x80 ft. rein.-con. headquarters and office building; 60x120 ft. shop building; paint, carpenter and blacksmith shop, and service building. $152,000. Partly financed by P.W.A.

Wash., Walla Walla—School Dist. 1, plans by J. Maloney, Yakima, constructing 122x170 ft. gymnasium. $115,000. Government will supply $51,750. P.W.A. approved.

†**W. Va., Richwood**—Treas. Dpt. at office Sup. Archt., Wash., D. C., rejected bids Sept. 12, constructing U. S. Post Office. Will readvertise. Noted Sept. 16, C. D.—Aug. 22, E. N.-R.

Wis., Milwaukee—City constructing and improving museum, West Wisconsin St., $107,045, painting and remodeling school $22,203; lighting playgrounds and repairing street signs, $30,645. W.P.A. funds allotted.

Wis., Neillsville—City plans by H. C. Hengels, 759 North Milwaukee, 2 story, basement, 106x132 ft. and 1 story, 85x100 ft., brick, rein.-con., steel city hall and community building plain found. W.P.A. project.

Wyo., Casper—Natrona Co. plans by Goodrich & Krusmark, 204 Ballard Bldg., Casper, court house. $423,686. P.W.A. loan and grant allotted.

B. C., Vancouver—G. P. Meehan, Vancouver, sponsoring 50,000 hp. power plant on Cheakamus River. Plans ready in November.

Que., Montreal—C. Des Baillets, ch. engr. Waterworks Comn., submits plan to City Executive Com. for development of hydro-electrical plant, 20,000 hp. capacity to supply city's needs.

BIDS ASKED

†**Ala., Fort McClellan**—Nov. 14, by U. S. Eng., Fort McClellan, constructing 1 story, tile, stucco chapel, and constructing enlisted men's service club, gymnasium and assembly hall; adv. Oct. 31, E. N.-R.

†**Ala., Fort McClellan**—Nov. 15, by Con. Q. M., constructing 291 man barracks; also bachelor officers' quarters and mess; adv. Oct. 31, E. N.-R.

Ala., Gadsden—Nov. 8 (extended date), by Etowah Co. Bd. Educ., 1 story, each, 4 room frame school at Whitesboro, 6 room frame at Sardis, 3 room and auditorium, brick veneer at John Jones School, 7 room and auditorium, brick veneer at Duck Springs, 7 room and auditorium, brick veneer at Hokes Bluff, brick veneer auditorium at Glencoe High. $100,000. P.W.A. project. P. W. Hofferbert, Gadsden, archt. Noted Oct. 23, C. D.

Ariz., Temple—Arizona State Teachers College, Temple, bids about Nov. 16, constructing dormitory at Arizona Teachers College Campus, $125,000; installing heating plant and conduits, $75,000. P.W.A. project. H. S. Reed, Phoenix, engr.

†**Calif., Redding**—Nov. 27, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $79,200. Noted Aug. 23, C. D.—July 4, E. N.-R.

†**Calif., Salinas**—Nov. 22, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $83,600. Noted Sept. 4, C. D.—July 25, E. N.-R.

†**Calif., San Francisco**—Nov. 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing vault entrances at U. S. Mint.

Colo., Durango—Nov. 12, by School Bd., brick, concrete school. $191,550. C. E. Thomas, 224 Colorado Springs Natl. Bank Bldg., Colorado Springs, archt. Voted bonds Oct. 8, for same.

Colo., Fruita—School Bd. bids about Nov. 7, 2 story, 165x200 ft., brick, rein.-con., steel high school. $157,278. P.W.A. project. T. H. Buell, 730 14th St., Denver, archt.

†**Colo., Lamar**—Nov. 22, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $59,400; adv. Oct. 31, E. N.-R. Noted Apr. 1, C. D.—Apr. 4, E. N.-R.

★ †**Conn., Stamford—Nov. 4, by P. Wks. Ad**ministration, Div. Housing, Interior Bldg., Wash., D. C., constructing foundations of Fairfield Avenue Housing Project. Total $800,000. Noted Oct. 21, C. D.—Oct. 24, E. N.-R.

†**Conn., Thompsonville**—Nov. 19, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. Noted July 8, C. D.—July 11, E. N.-R.

★ †**D. C., Wash.**—Nov. 25, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing archives extension (except elevators). $3,610,000.

†**D. C., Wash.**—Nov. 19, by Treas. Dpt. at office Sup. Archt., Wash., D. C., completing bird house at National Zoological Park. $90,000; adv. Oct. 31, E. N.-R.

†**D. C., Wash.**—Nov. 21, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing exhibition building for pachydrems. $250,000.

†**D. C., Wash.**—Nov. 26, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing exhibition building for small mammals and great apes at National Zoological Park. $250,000; adv. Oct. 31, E. N.-R.

†**D. C., Wash.**—Nov. 26, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing National Zoological Park, machine and carpenter shop, garage and store rooms. $90,000.

Ga., Clermont—Nov. 4, by Clermont Bd. Trustees, c/o B. M. Head, chn., c/o R. W. Smith, Jr., Gainesville, 1 story, basement, 55x230 ft. school and 44x70 ft. auditorium.

†**Ill., Chicago**—Nov. 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing stock yards postal station. $175,000.

†**Ill., Libertyville**—Nov. 4, by Rural Resettlement Div., P. Wks. Administration, Wash., D. C., constructing 44 houses, 44 barracks and 44 well houses.

†**Ill., St. Charles**—Nov. 22, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $54,500; adv. Oct. 31, E. N.-R. Noted June 7, C. D.—June 13, E. N.-R.

Ind., Indianapolis—Nov. 19, by Bd. School Comrs., A. B. Good, bus. dir., 150 North Meridian St., 2 story, basement, rein.-con. school for crippled children, on East Michigan St. $200,000. P.W.A. project. McGuire & Shook, 1401 Fletcher Trust Bldg., archts.

Ind., Shelbyville—Dec. 9, by Comrs. Shelby Co., C. X. Mohr, aud., 3 story, steel frame court house. D. A. Bohlen & Son, 1002 Majestic Bldg., Indianapolis, archts. $200,000. P.W.A. project. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

Ind., Terre Haute—Nov. 12, by Superintendent Public Instruction, 287 State Capitol, Indianapolis, improvements and additions to power plant, incl. 4 drum water tube boiler, chain grate force draft stoker, boiler setting, foundation and addition of shop building, piping and tunnel work, for Indiana State Teachers College. $124,000. P.W.A. project. J. M. Rotz Eng. Co., 817 Merchants Bank Bldg., Indianapolis, engrs.

†**Md., Chestertown**—Nov. 27, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $80,000.

†**Mass., Hingham**—Yards & Docks, Navy Dpt., Wash., D. C., taking bids motor driven 2 stage double-acting water-cooled air compressor with control equipment and accessories, at Naval Ammunition Depot, Spec. 8112.

Mass., Swampscott—Nov. 8, by Town, P. W. Blood, chn. Building Com., Town Hall, 3 story, basement, irregular sized brick, cast stone, steel high school addition, concrete found., incl. heating, plumbing and electrical work, Greenwood Ave. $325,000. P.W.A. project. J. Williams Beal Sons, 185 Devonshire St., Boston, archt. Noted July 10, C. D.—July 18, E. N.-R.

†**Mass., Wakefield**—Nov. 25, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $58,300.

Mass., Worcester—Nov. 5, by City, at office of Mayor, City Hall, elevators, finish hardware, sprinkler system, plumbing fixtures, toilet accessories and smoke breeching at City Hospital Ward and Surgical Building. G. Adolph Johnson, 16 Norwich St., archt. Stevens, Curtin & Mason, 45 Newbury St., Boston, assoc. archt.

Mich., Grand Rapids—Nov. 6, by P. A. Kammer, City Hall, engr. and Director P. Service, rein.-con. boiler foundation, incl. excavation, structural steel, reinforcing steel, concrete floor slab, ash pits and backfilling. P.W.A. project.

†**Mont., Hamilton**—Nov. 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Public Health laboratory quarters for medical officers and attendents, and animal house. $145,604; adv. Oct. 31, E. N.-R.

†**Mont., Hamilton**—Nov. 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing elevator in animal house.

†**Neb., Omaha**—Nov. 15 (extended date), by P. Wks. Administration, Housing Div., Interior Bldg., Wash., D. C., constructing foundations for North Side Housing Project. Total est. $2,000,000. Noted Oct. 22, C. D.—Oct. 24, E. N.-R.

†**Neb., Seward**—Nov. 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $42,800. Noted Mar. 17, 1933, C. D.—Mar. 23, 1933, E. N.-R.

†**N. J., Englewood**—Nov. 21, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $85,000. Noted Dec. 8, 1933, C. D.—Dec. 21, 1933, E. N.-R.

†**N. J., Rahway**—Nov. 25, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $85,300. Noted Aug. 3, C. D.—Aug. 9, E. N.-R.

N. M., Santa Fe—Nov. 11, by State, Santa Fe, constructing 3 story, basement, 200x200 ft., brick, steel, supreme court building, plain found., Don Gaspar St., $245,000. G. Street, 127 East Water St., archt. Noted May 16, C. D.—May 23, E. N.-R.

N. Y., Alden—Nov. 8, by Union Free School Dist. 10, grading, excavation and foundations for school. Total est. $117,000. P.W.A. project. Bley & Lyman, 505 Delaware Ave., Buffalo, archts. Noted Oct. 10, E. N.-R.

N. Y., Altoona—Central School Dist. 1, taking bids constructing foundations for 2 story, 108x260 ft. school. Total est. $216,363. P.W.A. project. A. W. Inman, 7 Clinton St., Plattsburg, archt. Noted Oct. 15, C. D.—Oct. 17, E. N.-R.

N. Y., Beacon—Nov. 14, by Dpt. Correction, State Office Bldg., Albany, construction, heating, sanitary work, electrical work and electric elevator for constructing and remodeling kitchen, dining room and bakery at Matteawan State Hospital.

†Federal Government

Public **Buildings (Continued)**

N. Y., **Bemus Point**—Nov. 15, by Bd. Educ., J. H. Kellog, pres., Bemus Point, constructing brick, steel central school addition, concrete found. $105,000. P.W.A. project. R. A. Freeburg, 1105 West 3rd St., Jamestown, archt. Noted Aug. 26, C. D.—Aug. 29, E. N.-R.

N. Y., **Brentwood**—Nov. 26, by State Dpt. Mental Hygiene, State Office Bldg., Albany, construction, heating, sanitary and electrical work for assembly hall, for Pilgrim State Hospital.

N. Y., **Brentwood**—Nov. 27, by Dpt. Mental Hygiene, State Office Bldg., Albany, construction, heating, sanitary and electrical work for industrial building, propagating house, at Pilgrim State Hospital. Noted Oct. 18, C. D.

N. Y., **Brooklyn**—Nov. 7, by Dpt. Health, 130 Center St., New York, construction and electrical work for Red Hook Gowanus Health Centre, Baltic and Court Sts. Noted Oct. 23, C. D.—Oct. 31, E. N.-R.

N. Y., **Brooklyn**—Nov. 13, by Dpt. Mental Hygiene, State Office Bldg., Albany, construction, heating, sanitary and electrical work, for assembly hall, Brooklyn State Hospital.

N. Y., **Brooklyn**—Nov. 7, by S. S. Goldwater, comr. Dpt. Hospitals, Municipal Bldg., New York, excavation, concrete foundation work, for nurses' home and training school; and general contract altering elevator, plumbing, heating, ventilating, electrical work, laundry equipment, for laundry building at Kings County Hospital, L. P. Ward, Inc., 609 Madison Ave., New York, archt.; excavating foundations for main building, altering garage to provide storage space, at Coney Island Hospital, Ocean Parkway and Avenue Z, Landsman & Smith, 105 West 40th St., New York, archts.

N. Y., **Brooklyn**—Nov. 22, by Bd. Higher Educ., at office Brooklyn College, 383 Pearl St., general contract plumbing, steam heating, electrical work, electric fixtures, elevator work in library building, incl. connecting pipe tunnel, for Brooklyn College. Corbett, Harrison & MacMurray, 140 Nassau St., New York, assoc. archts. R. Evans, archt.

†N. Y., **Canandaigua**—Treas. Dpt. at office Sup. Archt., Wash., D. C., bids about Dec. 20, constructing U. S. Post Office and Court House addition. Noted Oct. 17, C. D.—Oct. 24, E. N.-R.

†N. Y., **Canton**—Nov. 20, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $69,750; adv. Oct. 31, E. N.-R. Noted Sept. 18, C. D.—Sept. 26, E. N.-R.

N. Y., **Corfu**—Nov. 6, by Union Free School Dist. 7, excavating, foundations for school. $158,182. P.W.A. project. Bids in December on superstructure. Harbach & Kidney and J. E. Wells, Jr., 259 Delaware Ave., Buffalo, archts.

N. Y., **Dannemora**—Nov. 14, by Dpt. Correction, State Office Bldg., Albany, sanitary work, additional drainage, kitchen, mess hall and shop building, Clinton Prison.

N. Y., **Dongan Hills**—Nov. 7, by S. S. Goldwater, comr. Dpt. Hospitals, Municipal Bldg., New York, erecting and completing foundation work for children's hospital, Sea View Hospital, Richmond Boro. A. Mertin, 34 West 28th St., New York, archt.

N. Y., **Fleischmans**—Nov. 8, by Bd. Educ., general contract, plumbing, heating, electrical work for school. $105,000. P.W.A. project. R. T. Graham, 26 Prospect St., Middletown, archt. E. E. Seelye & Co., 101 Park Ave., New York, engr. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

†N. Y., **Floral Park**—Nov. 25, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $67,760.

†N. Y., **Garden City**—Nov. 22, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $84,300. Noted Mar. 1, 1933, C. D.—Mar. 9, 1933, E. N.-R.

N. Y., **Gloversville**—Bd. Educ. taking bids on foundations, 2 story, basement, 136x140 ft. school, McNab St. $188,336. W. B. Van Dreser, 21 West Fulton St. P.W.A. project. Noted Oct. 11, C. D.—Oct. 17, E. N.-R.

N. Y., **Hogansburg**—Nov. 26, by Bd. Educ., Education Bldg., Albany, construction, heating, sanitary and electrical work for school, for St. Regis Indian Reservation. Noted July 24, C. D.—Aug. 1, E. N.-R.

N. Y., **Holland Patent**—Central Rural School Dist. 1, taking bids constructing foundations for school. Total est. $425,000. P.W.A. project. Kinne & Frank, 7 Hopper St., Utica, archts.

N. Y., **Keesville**—Central School Dist. 1, Bd. Educ., taking bids constructing foundations for 2 story, basement, 150x200 ft. school. Total est. $280,000. A. W. Inman, 71 Clinton St., Plattsburg, archt. Noted Sept. 25, C. D. —Oct. 3, E. N.-R.

N. Y., **Kings Park**—Nov. 13, by Dpt. Mental Hygiene, State Office Bldg., Albany, miscellaneous additional construction work, at Kings Park State Hospital.

N. Y., **Lima**—Nov. 9, by Union Free School Dist. 9, constructing foundations for school. Total est. $104,600. P.W.A. project. Bley & Lyman, 505 Delaware Ave., Buffalo, archts. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. Y., **Lyons** — Nov. 13, by Bd. Supervs. Wayne Co., Wolcott, general contract infirmary at county home, Newark Rd. $75,000. P.W.A. project. Haskell & Considine, Hulett Bldg., Elmira, archts. Noted July 31, C. D.—Aug. 5, E. N.-R.

N. Y., **Marcellus**—Nov. 24, by Union Free School Dist. 2, excavating, grading for foundations and superstructure for school. $530,000. C. W. Clark, 27 North Main St., Cortland, archt. A. R. Acheson, Eckel Bldg., Syracuse, heating, ventilating and electrical engr. E. J. McCarthy, 411 South West St., Syracuse, plumbing engr. P.W.A. project. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

N. Y., **Middletown**—Nov. 7 (extended date), by Dpt. Mental Hygiene, State Office Bldg., Albany, constructing 5 family staff building at Middletown State Homeopathic Hospital. Noted Sept. 25, C. D.—Oct. 3, E. N.-R.

N. Y., **New Albion**—Nov. 11, by Union Free School Dist. 1, C. P. Setter, pres., excavation, foundations for school. Total est. $95,000. P.W.A. project. Bley & Lyman, 505 Delaware Ave., Buffalo, archts. Bids in December on superstructure. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. Y., **New Berlin**—Central Rural School Dist. 1, taking bids excavation, grading and foundations for school. $286,000. Bley & Lyman, 505 Delaware Ave., Buffalo, archts. Noted Sept. 4, C. D.—Sept. 12, E. N.-R.

N. Y., **New York**—Nov. 7, by S. S. Goldwater, comr. Dpt. Hospitals, Municipal Bldg., excavating, plain and rein.-con. foundation walls, footings, piers, column, floorings, pits, area walls and floors for Central Nurses' Residence, Morris & O'Connor, 101 Park Ave., New York, archts.; constructing service tunnel, for new power house, Starrett & Van Vleck, 267 5th Ave., New York, archts., both Welfare Island.

N. Y., **New York**—Nov. 7, by S. S. Goldwater, comr. Hospitals, Municipal Bldg., general contract engine generator, refrigerating compressor, piping and ventilating, electrical work for additions to power plant, at Fordham Hospital, C. Butler, 56 West 45th St., New York, archt.; general contract altering heating, ventilating, electrical work and equipment for garage and mortuary building, for male dormitory, also reconstructing garage at Fordham Hospital. R. R. Swartburg, Inc., 2 West 46th St., archts.

★ †N. Y., **New York**—Dec. 5, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing Madison Square U. S. Postal Station; adv. Oct. 31, E. N.-R. $850,000; also elevator plant in same.

†N. Y., **New York**—Nov. 7, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office Annex D, postal station freight elevators.

†N. Y., **Rochester**—Nov. 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office Garage (except elevator). $80,000.

†N. Y., **Rochester**—Nov. 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing 1 freight elevator in post office garage.

N. Y., **Rochester**—Nov. 19, by Bd. Educ., City Hall, excavation and foundations for School 19. $177,000. P.W.A. project. F. R. Scherer, 13 South Fitzhugh St., archt. Noted Oct. 25, C. D.

N. Y., **Rockaway Beach**—Nov. 7, by Dpt. Hospital, Municipal Bldg., New York, construction, plumbing, heating, ventilating, refrigerating, electric engines and generators, laundry equipment for power plant, male dormitory, laundry and installing equipment and altering main building, Neponsit Beach Hospital, Rockaway Beach Blvd., near Beach 149th St., Queens Boro. M. Bernstein, 2 Columbus Circle, New York, archt. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

N. Y., **Snyder**—Nov. 7, by Bd. Educ., Dist. 1, Amherst, excavating, foundations and structural steel for school. Total est. $278,408. P.W.A. project, P. H. Harbach & J. E. Kidney, 259 Delaware Ave., Buffalo, archts.

★ N. Y., **Syracuse**—C. W. Clark, archt., 27 North Main St., Cortland, bids about Nov. 6, excavating, grading, for market building, Hiawatha Blvd., for Central New York Regional Market Authority, R. D. Marvin, mayor, $800,000. P.W.A. project. Noted Aug. 22, C. D.—Aug. 29, E. N.-R.

N. Y., **Yonkers**—Nov. 14, by Bd. Educ., L. McConnell, trustee, City Hall, constructing School 25, incl. plumbing, heating, electrical work, for Beech Hill Edgemont Section. $170,575. P.W.A. project. Noted Oct. 8, C. D.—Oct. 10, E. N.-R.

N. Y., **Yonkers**—See "Contracts Awarded."

†**Okla., Fort Reno**—Nov. 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing field officers' quarters. $16,800; adv. Oct. 31, E. N.-R.

†**Ore., Marshfield**—Nov. 29, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $92,400. Noted Sept. 12, C. D.—Sept. 19, E. N.-R.

★ **Pa., Phila.**—Nov. 11, by Bd. Educ., Administration Bldg., constructing addition and alterations to Northeast High School, 8th St. and Lehigh Ave., $550,000; constructing elementary school, South South Conrad St. near Midvale Ave., $450,000. I. T. Catherine, Administration Bldg., archt.

†**Pa., Pittsburgh**—Nov. 14, by Treas. Dpt. at office Sup. Archt., Wash., D. C., miscellaneous changes in U. S. Post Office and Court House.

†**Pa., Pittsburgh**—Nov. 19, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing Wilkinsburg Postal Station. $100,000; adv. Oct. 31, E. N.-R.

†**Pa., Pittsburgh**—Nov. 21, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing South Hills Branch Post Office. $90,000.

†**S. C., Charleston**—Oct. 30 (extended date), by Yards & Docks, Navy Dpt., Wash., D. C., constructing shops, Navy Yard, Spec. 7989. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

Tenn., Chattanooga — See "Contracts Awarded."

†**Tex., Borger**—Nov. 25, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $65,000.

†**Tex., Galveston**—Nov. 15, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing quarters for senior medical officers, at U. S. Quarantine Station. $30,000.

†**Tex., Lufkin**—Nov. 27, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $50,200. Noted Feb. 27, C. D.

Tex., Port Lavaca — City, F. M. Dudgeon, mayor, bids about Dec. 1, 2 story, 120x180 ft., concrete mill type power plant, two 125 hp. gas engines, two 95.5 kva. generator, 20 ton ice plant, all new machinery and equipment, one 100 hp. boiler, incl. refrigeration, cold storage, oyster and shrimp storage facilities; and harbor and beach improvements, incl. 60,000 yd. dredging, canning factory, complete equipment, 250 ft. heavy timber wharf, fertilizer factory. $190,000. P.W.A. loan and grant for $140,600. Garrett Eng. Co., 300 Hughes St., Houston, and Port Lavaca, engrs. Noted Aug. 30, C. D.—Sept. 5, E. N.-R.

†**Vt., North Troy**—Nov. 27, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $80,000; adv. Oct. 31, E. N.-R. Noted May 29, C. D.—June 6, E. N.-R.

Wash., Spokane—Nov. 7, by City, three 1,625 kva. generators with exciters and thrust bearings, seven 100,000 kva. transformers, 15,000 volt metal clad oil circuit breakers, 7 standard steel switchboard panels, three 25 volt kva. transformers, 2,400 to 220-110 volts, and miscellaneous control and indicating devices, wire cables and conduit; Nov. 14, 8 taintor gates, 26x172 ft., 8 motor driven tainter gate hoists for one 3-man manuel traveling gantry crane, 6 vertical lift gates, 9½x18 ft., 6 motor-driven lift gate hoists, 14,000 lb. structural steel hoisting frames, motor operated trash track rack and 19,000 lb. structural steel trash rack; Dec. 5, constructing upriver station control works and power house, involving 19,000 cu.yd. rein.-con. all classes, 28,000 cu.yd. excav., 30,000 sq.ft. steel sheet piling, etc. Above in connection with construction new upriver power plant. P.W.A. allotted $4,800,000. Noted Apr. 16, C. D.—Apr. 18, E. N.-R.

Wash., Yakima—School Dist. 1, bids about Dec. 15, constructing high school gymnasium. $115,000. $51,750 P.W.A. funds allotted. J. Maloney, Yakima, archt.

†**W. Va., Welch**—Nov. 21, by Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office. $145,000.

LOW BIDDERS

★ N. Y., **Springfield**—W. C. Martin, archt. and supt. School Buildings, Flatbush Ave. extension and Concord St., Brooklyn, Oct. 21, constructing Andrew Jackson High School, for Bd. Educ., 500 Park Ave., New York, from G. F. Driscoll Co., 550 Union St., Brooklyn, $1,384,480. Bids Oct. 21. Noted Oct. 8, C. D. —Oct. 10, E. N.-R.

★ **R. I., Providence**—Bd. Contr. & Supply, City Hall, Oct. 14, general contract Senior High

†*Federal Government.*

Public Buildings (Continued)

School, 3 story, basement, 150x350 ft., brick, steel, stone, Mt. Pleasant St., from Tucker Constr. Co., 346 Washington St., Providence, $1,458,000***heating, from J. J. Hurley & Co., 104 Bway., Boston, Mass., $214,800***plumbing, from J. S. Cassedy, Inc., 133 Austin St., Cambridge, Mass., $108,963***electrical work, from Brady Electric Co., Inc., 236 Bedford St., Fall River, Mass., $65,800. Noted Sept. 20, C. D.—Sept. 26, E. N.-R.

CONTRACTS AWARDED

†Ala., Fort McClellan—Con. Q. M., constructing non-commissioned officers' quarters, to Murphy-Pond, Columbus, Ga., $60,400. Bids Oct. 18. Noted Oct. 23, C. D.—Oct. 3, E. N.-R.

†Ariz., Phoenix—Treas. Dpt. at office Sup. Archt., Wash., D. C., furnishing, installing interior lighting fixtures in new federal building, to Tri-State Electric Co., 324 North Willett St., Memphis, Tenn., $2,550. Bids Sept. 13.

†Ark., Clarksville—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. I. Barnes, Logansport, Ind., $34,-922. Bids Oct. 10. Noted Oct. 15, C. D.—Sept. 19, E. N.-R.

†Conn., Bristol—Treas. Dpt. at office Sup. Archt., Wash., D. C., altering and constructing 1 story, 50x50 ft. post office addition, Malone Court, to J. Lasprogato & Co., 70 Washington St., South Norwalk, $117,294. Bids Aug. 26. Noted July 25, C. D.—Aug. 1, E. N.-R.

†Conn., Torrington—Smith Constr. Co., general contractor, 101 Water St., Derby, heating for U. S. Post Office, for Treas. Dpt. at office Sup. Archt., Wash., D. C., to Mayflower Sales Co., 264 Asylum St., Hartford***plumbing, to Otto Epstein, Inc., 38 Elm St., Hartford***granite, to Torrington Monumental Iron Wks., Torrington***iron, to Usona Mfg. Co., Chateau Ave., St. Louis, Mo.***marble, to Vermont Marble Co., 101 Park Ave., New York***waterproofing and dampproofing insulation, to Hartford Roofing & Sheet Metal Co., 20 Huntley Pl., Hartford. Noted Sept. 10, C. D.—Sept. 12, E. N.-R., under "Contracts Awarded."

†D. C., Wash.—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing metal partitions for Internal Revenue Building extension, to E. F. Hauserman, 6800 Grant Ave., Cleveland, O., $43,870. Bids Sept. 27. Noted Oct. 9, C. D.—Sept. 19, E. N.-R.

†D. C., Wash.—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing miscellaneous work for Federal Warehouse, to Mechanical Eng. & Constr. Co., 1814 West Fayette St., Baltimore, Md., $35,990. Bids Sept. 27. Noted Oct. 15, C. D.

†D. C., Wash.—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing metal stack in archives building, to Peterson Co., 6634 Eastern Ave., Wash., D. C., $6,500.

†Fla., Pensacola — Virginia Eng. Co., Inc., general contractors, Nelson Bldg., Newport News, Va., awarded 550 tons structural steel for new naval barracks, to Virginia Steel Co., Richmond, Va. Noted Sept. 24, C. D.—Sept. 26, E. N.-R., under "Contracts Awarded."

†Ga., Vidalia — Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. T. Regan Co., Vidalia, $35,371. Bids Sept. 27. Noted Oct. 3, C. D.—Sept. 5, E. N.-R.

†Ill., Herrin—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. R. Redding, 1544 Cleveland Ave., Whiting, Ind., $59,800. Bids Sept. 26. Noted Sept. 30, C. D.—Sept. 5, E. N.-R.

Ind., Indianapolis—Bd. School Comrs., general contract school, 24th St. and Paris Ave., to Service Constr. Co., P. O. Box 1101, Indianapolis, $121,241***steam heating and ventilating, to Hayes Bros., 236 West Vermont St., $23,396***plumbing, to Strong Bros., 309 North Alabama St., $11,400***electric wiring, to Hatfield Electric Co., 102 South Meridian St., $4,885. Grand total $160,922. Bids Sept. 24. **P.W.A.** Noted Oct. 8, C. D.—Sept. 12, E. N.-R.

†Kan., Lindsberg—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. Sebacher Constr. Co., Garden City, $36,585. Bids Sept. 19. Noted Aug. 22, C. D. —Aug. 29, E. N.-R.

†Me., Farmington—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to MacDonald Constr. Co., 3829 West Pine Blvd., St. Louis, Mo., $52,310. Bids Sept. 24. Noted Sept. 30, C. D.—Sept. 19, E. N.-R.

Me., Mexico—Town, J. J. Johnson, clk., Box 164, Riglonville, 2 story, basement, 91x175 ft., brick, steel high school, concrete found., to C. E. Burton Co., 206 Coyle St., $114,540. Bids Sept. 15, awarded Oct. 21. Noted Sept. 23, C. D.—Sept. 12, E. N.-R.

Md., Catonsville — Spring Grove State Hospital, Cottages C and D and dining room and kitchen building, to J. Henry Miller, Inc., Eutaw and Franklin St., Baltimore, $263,000. Bids Oct. 9. Noted Oct. 14, C. D.—Oct. 3, E. N.-R.

†Minn., Albert Lea—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to C. M. Tapager Constr. Co., 225 Home Investment Bldg., $174,674. Bids Oct. 8. Noted Oct. 14, C. D.—Sept. 28, E. N.-R.

†Miss., Starkville—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to M. C. Munroe, Sylacauga, Ala., $14,-750. Bids Sept. 27. Noted Oct. 3, C. D.—Sept. 5, E. N.-R.

Mo., Algoa—Missouri Intermediate Reformatory, Algoa Farms and State Building Comn., Bi-Partison Bd., W. M. Eagan, executive secy., Jefferson City, constructing 2 story, basement, 50x127 ft. and 20x30 ft. administration, hospital and receiving building, to McCarthy Bros. Constr. Co., 4903 Delmar Blvd., St. Louis, $146,-625. **P.W.A.** Bids Oct. 1. Noted Sept. 10, C. D. —Sept. 12, E. N.-R.

†N. J., Perth Amboy—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to E. M. Johnson, 706 Bergen Ave., Jersey City, $179,700. Noted Sept. 27, C. D.—Oct. 3, E. N.-R.

N. J., Trenton—Dpt. Institutions & Agencies, State Office Bldg., Trenton, mechanical stokers for power house, State Hospital, to Babcock & Wilcox, Jersey City, $27,678. Bids Oct. 3.

N. Y., Brooklyn—Bd. Educ., 500 Park Ave., New York, constructing P. S. 247, to Jonwal Constr. Co., 220 East 42nd St., New York, $320,300. Bids Oct. 21. Noted Oct. 22, C. D. —Oct. 10, E. N.-R.

N. Y., Brooklyn — Dpt. Health, 139 Center St., New York, plumbing for Red Hook-Gowanus Health Centre, to J. Weil Plumbing Co., 382 East 33rd St., New York, $15,920; heating, to H. Starkman & Bro., 132 Brook Ave., New York, $15,241. Bids Sept. 10. Noted Sept. 18, C. D.

★ **†N. Y., Buffalo**—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Fleisher Eng. & Constr. Co., Minnesota Bldg., St. Paul, Minn., $1,175,000. Bids Oct. 18. Noted Oct. 21, C. D.—Sept. 19, E. N.-R.

N. Y., Ithaca — Dpt. Health, State Office Bldg., Albany, general contract constructing 4 family staff house, Building I, at Herman M. Biggs Memorial Hospital, to Plack Constr. Co., 130 Lincoln Ave., Saratoga Springs, $47,495 ***heating, to E. W. Tompkins Co., 22 Market St., Albany, $4,365***sanitary work, to A. B. Reddington, 541 Bway., Rochester, $3,361*** electrical work, to L. Horacek, 82 Norman Rd., Rochester, $2,840***special fixtures, to Bayley & Sons, Inc., 105 Vanderveer St., Brooklyn, $303. Grand total $58,364. Bids Oct. 10. Noted Sept. 25, C. D.—Oct. 3, E. N.-R.

N. Y., Lackawanna—B. Rebescher & Sons, general contractors, 110 Timon St., Buffalo, roofing for school, Franklin Ave., for Bd. Educ., to Umland Bros. Co., 868 Jefferson Ave., Buffalo; painting, to J. B. Barnes, 63 Woeppel St., Buffalo. **P.W.A.** Noted Sept. 23, C. D.—Sept. 26, E. N.-R., under "Contracts Awarded."

N. Y., New York—Bd. Educ., 500 Park Ave., constructing P. S. 107, to Walter Kidde Constructors, 140 Cedar St., $475,800. Bids Oct. 16. Noted Oct. 22, C. D.

†N. Y., Oswego—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing elevator in U. S. Post Office, to General Elevator Co., Bush and Ridgeley Sts., Baltimore, Md., $6,485. Bids Oct. 2. Noted Sept. 18, C. D.—Sept. 26, E. N.-R.

†N. Y., Rensselaer—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to L. Wexler, 1134 Baker Ave., Schenectady, $44,110. Bids Oct. 7. Noted Sept. 10, C. D.—July 18, E. N.-R.

N. Y., Rotterdam—K. Varney, general contractor, 1719 Athol Rd., structural steel for county highway building, Keller Ave., for Bd. Supervs. Schenectady Co., 612 State St., to Schenectady Steel Constr. Co., South Schenectady. Noted Oct. 7, C. D.—Oct. 10, E. N.-R., under "Contracts Awarded."

★ **N. Y., Springfield**—Bd. Educ., 500 Park Ave., New York, constructing Andrew Jackson High School, to G. F. Driscoll Co., 550 Union St., Brooklyn, $1,384,480. Bids Oct. 21. Noted Oct. 22, C. D.—Oct. 10, E. N.-R.

N. Y., Yonkers—Dpt. P. Wks., A. F. Corbin, supt. Schools, in charge of maintenance, roofing, painting, heating, plumbing, electrical work, masonry, carpentry, etc., for renovating high schools, grade schools administration buildings, Saunders Trade School, Yonkers College and Continuation School, own forces. $322,856 allotted by W.P.A. Material to be purchased.

†N. C., Winston-Salem—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to Virginia Eng. Co., Newport News, Va., $274,500. Bids Sept. 27, awarded Oct. 17. Noted Oct. 14, C. D.—Oct. 10, E. N.-R.

†N. C., Winston Salem—Treas. Dpt. at office Sup. Archt., Wash., D. C., furnishing, installing 1 freight elevator in U. S. Post Office, to Salem Fdry. & Machine Wks., Salem, $1,816. Bids Oct. 9. Noted Oct. 14, C. D.—Oct. 3, E.N.-R.

†O., Cleveland — P. Wks. Administration, Housing Div., Wash., D. C., painting buildings for housing development, Cedar-Central Housing Project, to G. D. Cornell Co., 3219 Detroit Ave. Total est. $2,700,000. Noted June 13, C. D.—June 20, E. N.-R., under "Contracts Awarded."

†O., Cleveland — P. Wks. Administration, Housing Div., Wash., D. C., painting for Outhwaite Housing Project, to P. J. Hughes Painting & Decorating Co., 2182 East 31st St. Total est. $2,613,000. Noted Sept. 30, C. D.—Oct. 3, E. N.-R., under "Contracts Awarded."

†Okla., Hugo — Treas. Dpt. at office Sup. Archt., Wash., D. C., completing construction U. S. Post Office, to J. I. Barnes, Logansport, Ind., $14,170. Bids Oct. 7. Noted Oct. 9, C. D.—Sept. 19, E. N.-R.

†Pa., Pittsburgh—Treas. Dpt. at office Sup. Archt., Wash., D. C., painting and appurtenant repairs to U. S. Post Office, to J. J. LeValley 5433 Columbo St., East Pittsburgh, $18,357.

Tenn., Chattanooga—City, c/o F. H. McMillan, comr., 3 story, basement addition to city high school, 3rd St., W.P.A. labor, $264,025. C. W. Benton, Sunset Terrace, archt. A. Black, Municipal Bldg., engr.

Utah, Fillmore — Millard Co. School Dist., general contract school building additions at Delta, Hinkley and Fillmore, to Talboe & Lichfield, Provo. Est. $111,000. **P.W.A.** Bids Oct. 15. Noted Oct. 8, C. D.

†Va., Orange — Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to J. I. Barnes, Logansport, Ind., $37,-460. Bids Sept. 23. Noted Sept. 26, C. D.—Aug. 29, E. N.-R.

†Wash., Port Angeles—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing barracks, shop and garage building, to A. F. Mowat, 1331 3rd Ave., Seattle, $59,572. Bids Oct. 11. Noted Oct. 15, C. D.

★ **†T. H., Pearl Harbor**—Yards & Docks, Navy Dpt., Wash., D. C., constructing barracks, mess hall and quarters, Spec. 7474, to R. E. Woolley, Honolulu, $563,000. Other items rejected. Bids Oct. 16. Noted Oct. 22, C. D.

†Puerto Rico, Mayaquez—Treas. Dpt. at office Sup. Archt., Wash., D. C., constructing U. S. Post Office, to McDonald Constr. Co., 3829 West Pine Blvd., St. Louis, Mo., $136,-406. Bids Oct. 11. Noted Oct. 15, C. D.—Oct. 3, E. N.-R.

Canada—Dpt. P. Wks., Ottawa, Ont., constructing various public buildings under Public Works Construction Act, as follows: public building, Penticton, B. C., to Dominion Constr. Co. Ltd., $56,244***public building, Kingsville, Ont., to T. G. Wormick & Son, Blenheim, Ont., $26,690***public building, Stanstead, Que., to Alphonse Davis, Richmond, Que., $13,900*** public building, Quebec West, Que., to Ludgen Lemieux Ltd., Quebec, Que., $6,828***public building, Armstrong, B. C., to David Haurie, Vernon, B. C., $17,943***constructing wharf repairs, Grosse Roche, Que., to J. E. Tremblay & C. H. Bouchard, Lamalbaie, Que., $10,290 ***dredging Eastern Passage, Halifax Co., N. S., to Morris, Hennebury & Edward Gill, Eastern Passage, N. S., $8,112***constructing roadway on Waterfront from Nanainco St. to Kaslo St., Vancouver, B. C., to G. W. Ledingham & Co. Ltd., Vancouver, B. C., $8,800. Grand total $148,807.

Canada—Dpt. P. Wks., Ottawa, Ont., constructing public building, Kelowna, B. C., to Geo. L. Dore, Kelowna, B. C., $47,500***public building, Watrous, Sask., to Poole Constr. Co., Regina, Sask., $18,612***public building, Creston, B. C., to A. H. Green Co. Ltd., Nelson, B. C., $22,753***guard room and motor building for Permanent Force Barracks, Calgary, Alta., to Bennett & White Constr. Co. Ltd., Calgary, Alta., $32,185***Customs and Immigration Building, Centreville, N. B., to Vernet Tracey, Centreville, N. B., $6,926. Grand total $127,976.

Ont., Ottawa—Secretary Dpt. P. Wks., Ottawa, general contract 3 story, basement, reincon., brick barracks for Royal Canadian Mounted Police at Rockcliffe, to Doran Constr. Co. Ltd., 78 Bank St.***cut stone, to Ritchie Cut Stone Co. Ltd., 1221 Bay St., Toronto*** structural and reinforcing steel, to Dominion Reinforcing Steel Co. Ltd., 396 Somerset St. Est. $130,000. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

Ont., Toronto—M. Browne, archt., 627 Confederation Life Bldg., constructing 2 story, 100x112 ft., brick, steel Postal Station "K," plain found., Yonge St. at Montgomery Ave., for Dpt. P. Wks., Ottawa, to Carter-Hall-Aldinger Ltd., Mills and Cherry Sts. $149,229.

†Federal Government.

COMMERCIAL BUILDINGS

PROPOSED WORK

Calif., Los Angeles — Hal E. Roach, Inc., Studios, 8822 Washington Blvd., Culver City, plans studio improvements after Jan. 1. $400,000.

Ga., Decatur—Agnes Scott College, c/o J. R. McCain, pres., plans by Edwards & Sayward, 101 Marietta St., Atlanta, and soon takes bids 2 story, basement, brick, limestone, structural steel, rein.-con. library. $200,000. R. Logan, 101 Marietta St., Atlanta, engr. Noted July 24, C. D.—Aug. 1, E. N.-R.

Mich., Saginaw—Dreamland Theatre plans by Bennett & Straight, 201 Schaefer St., Dearborn, 2 story, basement, 91x165 ft., brick, rein.-con., steel theatre, plain found. $110,000.

Mont., Helena—H. J. Hamill & Associates, Bozeman, plans by F. A. Naramore, Central Bldg., and B. M. Priteca, Pantages Bldg., Seattle, Wash., 5 story, basement theatre, office and apartment building, Main St. and Fuller Ave. $150,000.

Mont., Lewistown—St. Josephs Hospital plans nearing completion by J. Plovanic, Lewistown, 3 story, 55x120 ft., brick, stone hospital, 40x85 ft. nurses' home. $150,000.

N. J., Bernardsville—Corporation, c/o Ellsworth & Dobbs & Associates, Bernardsville, plans constructing group dwellings and tract development on 26 acres, Mullens Lane. To exceed $250,000.

N. J., Englewood — Homes of To-Morrow, Inc., Englewood, sketches by Shampan & Shampan, 26 Court St., Brooklyn, N. Y., constructing group 2 story dwellings. $115,000.

N. J., Garfield—Albert Steir, 518 Sampson St., plans 100 dwellings for tract development, Chestnut and Spring Sts. To exceed $200,000. Architect not appointed.

N. J., Jersey City—Dorsey Realty Syndicate, c/o New Jersey Title Guarantee & Trust Co., 83 Montgomery St., plans constructing apartments, Arlington, Garfield and Randolph Aves. To exceed $105,000.

N. J., Jersey City—Dorsey Realty Syndicate, c/o New Jersey Title Guarantee & Trust Co., 83 Montgomery St., plans 3 story store and office, Hudson Blvd. To exceed $100,000. Site acquired.

N. J., Jersey City—Dorsey Realty Syndicate, Inc., 110 West 47th St., New York, N. Y., plans by A. Buckley Liptak, 1 Montgomery St., residential development consisting of forty 2½ story, brick homes and possibly apartment house, at Arlington, Randolph and Garfield Aves. $300,000.

N. J., Teaneck — Kings Builders, Inc., 66 Court St., Brooklyn, N. Y., plans constructing (2nd unit), dwellings, Midwood Rd., Alpine Dr. and Monterey Ave. To exceed $100,000. Site acquired.

N. J., Tenafly—A. A. Paterno, 122 East 42nd St., New York, N. Y., developing 16 acre tract and constructing group of dwellings. To exceed $100,000. Site acquired. Architect not appointed.

N. J., Westwood—Arlington Park Developing Co., c/o J. H. Kislak, 29 Journal Sq., Jersey City, plans group of 54 dwellings. To exceed $150,000. Architect not appointed.

N. Y., Bayside—Gross Morton Corp., 160-16 Jamaica Ave., plans by A. E. Allen, Garden City, constructing (3rd unit), group 25x43 ft. dwellings, 50th Ave. and 212th St. $120,000.

N. Y., Brooklyn—Alberly Realty Corp., 7991 Hopkinson Ave., plans by Kavy & Kavovit, 16 Court St., 6 story, brick apartment, Brighton Beach Ave. and 3rd St. $150,000.

N. Y., Brooklyn — Brooklyn Savings Bank, Clinton and Pierrepont Sts., plans by Slee & Bryson, 16 Court St., altering heating and plumbing in two 5 story apartments, 224 Pacific St. $30,000.

N. Y., Brooklyn—Corporation, c/o A. Appel & E. Greenberg, 323 Flatbush Ave., plans 6 story, brick apartment, 8th Ave. and Carroll St. To exceed $200,000.

N. Y., Brooklyn—Corporation, c/o S. Singer, 153 Pierrepont St., plans by O. I. Silverstone, 153 Pierrepont St., 6 story, brick apartment, 18th Ave. and East 2nd St. $105,000.

N. Y., Eastchester—Bergen Land Realty Corp., c/o H. D. Cole, 10 East 1st St., Mount Vernon, plans group dwellings, Bronxville Manor. To exceed $105,000. Architect not appointed.

N. Y., Flushing—St. Mary's Parish, H. Lynch, pastor, 146-41 Jasmine Ave., plans by W. J. Boegel, 13 East 37th St., New York, constructing 2 story, 144x152 ft. school, Jasmine Ave. near Parsons Blvd., $150,000; 45x70 ft. rectory, Parsons Blvd. and Holly Ave., $45,000.

N. Y., Hempstead—M. Cohn, c/o J. J. Kramer, Warner Ave., and Howard St., plans tract development and group dwellings, Warner Ave. and Howard St. $100,000 or more. Architect not appointed.

N. Y., Jamaica—Gertz Department Stores, M. Gertz, in charge, 162-10 Jamaica Ave., plans 6 story department store addition, New York Ave. $250,000. Site purchased.

N. Y., New York—Almor Realty Corp., 133 West 42nd St., plans by L. and L. Levy, 527 5th Ave., altering heating in 5 story, brick apartment, Prospect Ave. and Jennings St. $28,000.

N. Y., New York—Aral Holding Corp., 215 East 149th St., plans by H. B. Rutkins, 580 5th Ave., 6 story apartment, 198th St. and Creston Ave. $150,000.

N. Y., New York—Childrens Aid Society, 105 East 22nd St., plans by Lewinson & Todaro, c/o owner, altering heating and mechanical equipment in 4 story community center, 407 East 73rd St. $40,000.

N. Y., New York—Crenshaw Holding Co., 123 West 64th St., A. Rubin, pres., plans by B. Schlanger, 67 West 44th St., altering heating, plumbing in store and theatre, University Ave. and 179th St. $30,000.

N. Y., New York—Emigrant Industrial Savings Bank, 51 Chambers St., plans by Voorhees, Gmelin & Walker, 101 Park Ave., altering mechanical equipment in heating and plumbing in office building, 5 East 42nd St. $60,000.

N. Y., New York—Framildena Realty Corp., 90 East 164th St., plans by J. M. Felson, 250 West 57th St., 6 story, 85x100 ft. apartment, Decatur Ave. and 205th St. $200,000.

N. Y., New York—Jourmire Silverman, 285 Madison Ave., plans store and apartment, 235 East 38th St. $135,000. Property acquired.

N. Y., New York—Neurological Institute of New York, 193 Fort Washington Ave., plans by R. Pomerance, 18 East 48th St., altering heating, plumbing, mechanical equipment in hospital, 193 Fort Washington Ave. $30,000 or more.

N. Y., New York—Nosmarba Realty Corp., 2094 Grand Concourse, plans by M. Glick, 400 East Fordham Rd., altering heating, plumbing in 5 story store and apartment, 183rd St. and Grand Concourse. $30,000.

N. Y., New York — V. Sanger, 162 West 145th St., plans by J. M. Felson, 250 West 57th St., constructing 6 story, brick apartment, 165th St. $225,000.

N. Y., New York—Spallone Ciampi Corp., 391 East 149th St., plans by J. Schafran, 441 East Tremont Ave., 6 story apartment, 201st St. and Perry Ave. $125,000.

★ **N. Y., New York**—Trustees of Sailors Snug Harbor, 262 Greene St., plans by Corbett & MacMurray, 130 West 42nd St., 9 story, 115x135 ft. store and apartment, 17 5th Ave. $1,000,000.

N. Y., New York—Oceana Realty Co., c/o J. Perlbinder, 535 5th Ave., plans by H. I. Feldman, 15 West 44th St., 6 story apartment, Creston Ave. and Field Pl. $150,000.

N. Y., New York—One Thousand Four Hundred Seventy-Six Realty Corp., 565 5th Ave., plans by L. and L. Levy, 527 5th Ave., altering heating, plumbing in store and apartment, 1397 Madison Ave. $90,000.

N. Y., New York—Two Hundred Thirty-Five East 39th St., Inc., 270 Madison Ave., plans by I. Margon, 110 East 42nd St., altering heating in 4 story apartment, 239 East 39th St. $45,000.

N. Y., New York—Thirty West 44th Street Corp., c/o J. S. Buzzini, lessee, 312 Hayward Ave., Mount Vernon, plans altering heating, plumbing in 11 story club and hotel, 30 West 44th St. $30,000 or more.

N. Y., Riverdale-on-Hudson—Riverdale Neighborhood Assn., W. P. Zachry, chn., Riverdale, plans constructing library and community house, Moshula Ave. near 256th St. Architect and engineer not appointed.

N. Y., St. Albans—Prisco & Soverio, Farmers Blvd. near Merrick Rd., plans (2nd unit), group 59 dwellings, Farmers Blvd. near Merrick Rd. To exceed $100,000.

O., Granville — Dennison University, A. A. Shaw, pres., plans 2 story, basement library. $300,000 gift donated to finance construction of same.

★ **Ore., Portland**—Montgomery Ward & Co., Chicago Ave. and North Larr Sts., Chicago, Ill., plans 9 story addition to department store and distribution plant. $750,000.

Pa., Butler—Montgomery Ward Co., 619 Chicago Ave., Chicago, Ill., plans being completed by R. R. Rowe, 619 Chicago Ave., Chicago, Ill., altering store, Main St. $150,000.

Wash., Tacoma—J. S. Baker, Fidelity Bldg., plans by S. Nelson, 405 South Sheridan Ave., 4 story, 115x120 ft. store, Bway. at 13th St. $125,000. Sears, Roebuck & Co., 24th and Pacific Ave., lessees.

Wash., Tacoma — Tacoma Hotel Co., F. Hickey, pres., A St., plans rebuilding 1 and 5 story, 100x300 ft., brick, timber hotel, A St. $500,000.

Wis., Amery—St. Joseph's Roman Catholic Church plans constructing church. To exceed $100,000. Architect not appointed.

Wis., Sheboygan—Kohl Realty Co., completing plans constructing 3 story, basement, 74x120 ft., store building, to be occupied by Montgomery Ward & Co., Chicago, R. M. Stearns, mgr.

B. C., Vancouver—Young Men's Christian Assn. plans constructing new building. $450,000 appropriated.

★ **Man., Winnipeg**—Syndicate, c/o A. Queen, mayor, City Hall, making plans 12 story, concrete, steel, stone, hotel, theatre, 15 stores and bus terminal, Memorial Park. $1,500,000.

Ont., York—A. C. Cowan preparing plans constructing 108 houses. $175,000.

BIDS ASKED

N. Y., New York—See "Contracts Awarded."

Ont., Ottawa—Richards & Abra, archts., 55 Metcalfe St., bids about Nov. 1, constructing 7 story, basement, apartment house, Metcalfe St., for Bytoun Realties Co., Ltd., Otawa. $200,000.

CONTRACTS AWARDED

Ala., Birmingham—Warren, Knight & Davis, archts., Protective Life Bldg., remodeling 4 story, basement hotel into store building, 3rd Ave. and 20th St., incl. 3 elevators, sprinkler system, plumbing, heating, etc., for First National Bank, 203 North 20th St., to Gundling Building & Constr. Co., 64 West Randolph St., Chicago, Ill. Est. $200,000. Noted Sept. 20, C. D.—Sept. 26, E. N.-R.

Calif., San Francisco—Owner, c/o H. C. Baumann, archt., 251 Kearny St., 10 story, steel, rein.-con. apartment, vicinity of Broadway and Buchanan St., to Meyer Constr. Co., 735 Portôla Dr., to exceed $150,000. Awarded Oct. 16. Owners name withheld until completion of plans.

Colo., Colorado Springs — Union Printers Home, J. McCoy, supt., new hospital and sanatorium, to Platt Rogers, Inc., Pueblo. Est. $150,000. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

Conn., Stamford—Genovese & Rich, Inc., general contractors, 270 Atlantic St., plumbing for brick theatre, to John McNamara & Son, Inc., 270 Atlantic St. S., for Rena Realty Co., 465 Park Ave., New York***heating and air conditioning, to Adams Eng. Co., Inc., 55 West 42nd St., New York. Noted Oct. 3, C. D.—Oct. 10, E. N.-R., under "Contracts Awarded."

Ga., Atlanta—Rich's Inc., c/o W. Rich, pres., 1 story addition to store, Broad and Alabama Sts., to Capitol Constr. Co., 62 Bartow St., Atlanta. Est. $200,000. Hentz-Adler & Shutze, Candler Bldg., archts.

Mass., Jamaica Plain—Allen, Collens & Willis, archts., 75 Newbury St., Boston, general contract 1 and 2 story, basement, 60x60x115 ft., brick, stone church, concrete found., Seaverns Ave., to C. S. Patten, Melrose, for Congregational Church, W. Rice, chn. Bd. Trustees, Seaverns Ave. Bids Sept. 18. General Contractors awarded contract for 105 tons structural steel, to A. O. Wilson Structural Co., 40 Smith Place, Boston.

★ **Minn., St. Paul**—Tri-State Telephone & Telegraph Co., 5th and Cedar Sts., general contract constructing 7 story, basement, 140x200 ft. central exchange and office building, Market St. between Kellogg Blvd. and 4th St., to P. Steenberg Constr. Co., 1757 First Natl. Bank Bldg. Total est. $1,500,000. Noted Oct. 2, C. D.—Oct. 10, E. N.-R.

Mo., St. Louis—Washington University, c/o G. R. Throop, chancellor, Skinker and Lindell Blvds., and Mrs. G. W. Brown Estate, general contract 3 story, 52x148 ft. and 50x105 ft., rein.-con., granite George Warren Brown Memorial Hall for social service department, Skinker Blvd., to Dickie Constr. Co., 517 Loudermann Bldg.***electrical work, to S. C. Sacks, Inc., 817 North 9th St.***stacks, to Snead & Co., 96 Pine St., Jersey City, N. J. Est. $200,000. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

N. Y., Brooklyn—Hotel St. George, 51 Clark St., M. Samuels, in charge, altering restaurant and hotel, to Bing & Bing, 119 West 40th St., New York. Est. $150,000. Schultze & Weaver, 18 East 48th St., New York, archts.

N. Y., Canandaigua—Bringham Hall Hospital, Main St., general contract 3 story, basement, 40x50 ft. hospital, Main St., to Gorsline & Swan Constr. Co., 96 Pearl St., Rochester. Awarded Oct. 14.

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★*Federal Government.*

Commercial Buildings (Continued)

N. Y., Hempstead—Realty Reights, Inc., 120 West 42nd St., New York, constructing group dwellings, California Ave. and Front St. separate contracts now being awarded. To exceed $100,000. Noted Sept. 6, C. D.—Oct. 3, E. N.-R.

N. Y., New York—Hagerdorn Realty Corp., 211 Central Park West, altering heating, incinerator in 7 story apartment, 2261 Bway., to J. Schlesinger, Inc., 18 East 41st St. Est. $50,000. L. S. Weeks, 101 Park Ave., archt. Noted Sept. 23, C. D.—Sept. 26, E. N.-R.

N. Y., New York—Pennsylvania R. R. Co., T. J. Skillman, ch. engr., Broad Street Sta., Phila., Pa., general contract altering railroad station, to J. Stewart & Co., 230 Park Ave. General contractors awarded contract for 5 escalators, to Otis Elevator Co., Yonkers, about $150,000.

N. Y., New York—Corporation, c/o Meyer Hartmann, 332 East 149th St., altering heating in two 5 story apartments, 410 West 46th St., separate contracts. $40,000. I. L. Crausman, 332 East 149th St., archt.

N. Y., Plattsburg—Solvay Bruno, general contractor, Church Ave., Ballston Spa, structural steel for theatre, for W. E. Banton, 324 Bway., New York, to Franklin Fordyce, Inc., 722 Bway., Schenectady; plumbing and heating, to J. Freeman Co., Margaret St. Noted Oct. 8, C. D.—Oct. 10, E. N.-R., under "Contracts Awarded."

N. Y., Rochester—James Gamble Rogers, Inc., archts., 154 East 46th St., New York, taking bids general contract plumbing, heating and electrical work for chapel, South Goodman St., for Colgate Rochester Divinity School, 1100 South Goodman St. Noted Aug. 1, C. D.—Aug. 8, E. N.-R.

N. Y., Rochester—C. A. Carpenter, archt., Genesee Valley Trust Bldg., taking bids general contract plumbing, heating and electrical work for dormitory for missionaries, Goodman St., and for general contract heating, plumbing and electrical work for dormitory for married students, South Goodman St., for Colgate Rochester Divinity School, 1100 South Goodman St. To exceed $105,000. Noted Sept. 11, C. D.

N. Y., Utica—St. Louis of Gonzaga Roman Catholic Church, 726 Elizabeth St., excavating for church, to Leaf Bros. & Owen, 15 Johnson Park, Utica***heating, to P. Hamje, 1636 Kemble St.***carpentry work, to M. Zogby, 1161 Jefferson Ave., Utica. Noted July 18, C. D.—July 25, E. N.-R.

N. Y., West Park — Missionary Sisters of Sacred Heart, general contract parochial school, to E. and F. Constr. Co., 78 Wells St., Bridgeport, Conn. Est. $125,000. A. DePace, 151 West 48th St., New York, archt. Noted Sept. 20, C. D.—Sept. 26, E. N.-R.

Tenn., Nashville—Sears, Roebuck Co., department store and mail order house, 8th Ave. and Church St., to Rock City Constr. Co., 135 4th Ave. N. Est. $250,000. Freeland & Roberts, Independent Life Bldg., archts.

Ont., Hamilton — Piggott Constr. Co., Ltd., general contractors, Piggott Bldg., electrical work for 3 story, basement, 80x100 ft. home for sisters, King St. W., to Sterling Electric Co., Ltd., 428 Cannon St. E.; plumbing and heating, to Adam Clark, Ltd., 7 Main St. W., for Community of Sisterhood of St. Joseph, 204 Park Ave. N. Noted Oct. 11, C. D.—Oct. 17, E. N.-R.

Ont., Ottawa—H. Dagenais, Ltd., general contractor, 225 St. Patrick St., plumbing and heating for 4 story, basement, brick, steel convent addition, for Order of Grey Nuns of the Cross, Sussex St., to W. D. St. Cyr, 68 Notre Dame St., Hull, Que.***electrical work, to Metropolitan Electric Co., Ltd., 962 St. Denis St., Montreal, Que.***painting and glazing, to Duford, Ltd., 70 Rideau St. Noted Oct. 18, C. D.—Oct. 24, E. N.-R.

INDUSTRIAL BUILDINGS

PROPOSED WORK

California — REFINERY — Spreckels Sugar Co., 2 Pine St., San Francisco, plans beet sugar refinery, Yolo Co.

Calif., Junction City — MINING DEVELOPMENT—J. O. Mandell, Junction City, plans mining development, incl. canal and water diversion from Johnson's Creek, vicinity here. $30,000.

Calif., Santa Barbara—CITRUS PLANTS—Toleta Citrus Growers Assn., 10 mi. north of Santa Barbara, plans by W. W. Ache, 301 North Citrus Ave., Los Angeles, one story, 120x300 ft. receiving, washing, coloring and packing lemons, and 2 story, 120x154 ft. storage building, 10 mi. north of here. Te exceed $28,500.

Calif., Weaverville — MINING DEVELOPMENT, etc.—Corporation, c/o H. A. Spindler, Weaverville, plans mining development, flumes, canal, etc., incl. water diversion from Whites Creek, vicinity of here. $75,000 or more.

Conn., Hartford—SERVICE, etc.—Owner, c/o Nathan Herrup, Inc., 42 Asylum St., Hartford, plans by A. Feinverg, 1127 Main St., 1 story, 75x160 ft., brick, service and sales building, Main and Windsor Sts. $40,000.

Idaho, Boise — REFRIGERATION PLANT—Boise Cold Storage Co., 16th and Railroad Sts., plans refrigeration and cold storage plant. To exceed $50,000. **Maturity indefinite.** Architect not appointed.

Ill., Chicago—PLANT—Diamond "T" Motor Car Co., 4517 West 26th St., soon lets contract plant. $130,000. Armstrong, Furst & Tilton, 11 South La Salle St., archts.

Ia., Ft. Dodge—PLANT—Universal Gypsum & Lime Co., 420 Lexington Ave., New York, N. Y., plans improving plant. $35,000 or more.

Mich., Battle Creek—CARTON FACTORY, etc.—Michigan Paper Carton Co., Battle Creek, sketches by Shreve, Anderson & Walker, 857 Book Bldg., Detroit, 2 story, brick, rein.con. factory, and warehouse, plain found. $40,000.

Mich., Lansing—OIL REFINERY—Lakeland Refinery Co., East Lansing, plans oil refinery and distillate plant brick, steel, plain found. $100,000. Ernest N. Miller Eng. Service, 538 South Clark St., Chicago, Ill., engrs.

Mich., Muskegon — SERVICE STATIONS — Nu-Way Service Stations, Inc., c/o Naph-Sol Refining Co., F. H. Emig, pres., Muskegon, chain of gasoline service stations at various points in Western Michigan, installing 500 and 1,000 gal. steel tanks, electric pumps, etc., in each unit. $50,000 or more. Private plans.

Mich., Northville — BREWERY — Northville Brewing Co., plans by Smith, Hinchman & Grylls, archts. and engrs., Marquette Bldg., Detroit, 3 story, brick, steel, rein.-con. ale house for brewery, plain found. $40,000.

Mo., Kansas City—PLANT—Thompson Hayward Chemical Co., 2915 Southwest Blvd., plans by R. N. Wakefield, 1012 Baltimore St., plant addition. $50,000.

Mont., Great Falls—SHOP, GARAGE, etc.—Great Falls Coach Lines Co., 117 2nd Ave. N., plans alterations and additions to shop, garage and bus terminal. $35,000.

Neb., Lexington — GAS PLANTS—Nebraska Gas & Fuel Co., Lexington, and E. R. Duree, Kansas City, Mo., recently incorporated filed application with Nebraska Ry. Comn., Lincoln, for permission to issue $250,000 additional stock to take over 13 natural and artificial gas plants in 13 cities of state and improve and better same.

Neb., Lincoln—PLANT—Agricultural Power Alcohol Corp., J. J. Bogan, secy., plans purchasing sites in various larger cities of the state for constructing plants, where farm products are to be distilled into alcohol.

Neb., Omaha — BISCUIT FACTORY — Item-Barmettler Biscuit Co., plans by J. T. Allan, Brandeis Theatre Bldg., biscuit factory, 30th and Taylor Sts. $250,000. Noted Sept. 19, C. D.—Sept. 26, E. N.-R.

N. J., Harrison — OIL TERMINAL — Hartol, Inc., 117 Liberty St., New York, N. Y., plans bulk oil terminal and storage, incl. docks, etc., Passaic River and Dey St. To exceed $50,000. Site acquired.

N. J., Hoboken—One Thousand One Hundred Adams St. Corp., 11th and Adams Sts., plans altering factory. To exceed $28,000. **Maturity indefinite.** Architect not appointed.

N. Y., Buffalo—PLANT—Bell Aircraft Corp., 250 Elmwood Ave., plans purchasing plant equipment, incl. conveyors, hoists, motors, etc., in new plant at 250 Elmwood Ave. $75,000.

N. Y., Buffalo—PLANT—Worthington Pump & Mchy. Corp., Clinton and Roberts Sts., plans by H. Lindenkohl, engr. and archt., c/o owners, Harrison, N. J., constructing plant addition, Clinton St. To exceed $28,500.

N. Y., Corona — PLANT — American Brake Shoe & Fdry Co., 230 Park Ave., New York, plans 2 story, 75x180 ft. plant, Riverside Ave. and Long Island R. R. tracks. $150,000. Private plans.

N. Y., Long Island City—PLANT—American Chicle Co., plans by W. Higginson, 101 Park Ave., New York, altering plant, Thompson Ave. and 30th Pl. $40,000.

N. Y., New York — CAR BARNS — Third Avenue Railway Co., 2396 3rd Ave., plans by J. P. Gallagher, c/o owner, altering car barns, 789 10th Ave. $200,000.

N. Y., New York—STORAGE, etc.—One Hundred Eight John Street Corp., 90 John St., plans by M. J. Harrison, 63 Park Row, 3 story storage and office, 104 John St. $150,000.

O., Beverly—DAIRY—United Dairy Co., Barnesville, plans dairy plant. $100,000. Site to be selected.

O., Cincinnati—PLANT—American Book Co., 300 Pike St., plans 5 story plant addition, 3rd and Butler Sts. To exceed $40,000. Site acquired.

O., Hamilton — POWER PLANT — Beckett Paper Co. making plans constructing and equipping 400 lb. pressure boiler plant and generating plant. Est. $250,000. Fosdick & Hilmer, Union Trust Bldg., Cincinnati, engrs.

O., St. Clairsville—PLANT—Artcraft Metal Co., B. C. Zuhar, mgr., Martins Ferry, plans stove and range manufacturing plant on hilltop. $50,000. Architect not appointed.

Okla., Oklahoma City—STOCK PENS—Wilson & Co., Chicago, Ill., plans constructing additional live stock pens for packing plant. $40,000. W. W. Martin, Oklahoma City, engr.

Pa., Erie—PLANT—Louis Marx Co., Inc., 200 5th Ave., New York, and c/o Girard Model Wks., Girard, purchased Erie Stove & Mfg. Co. plant and plans rehabilitating, altering same, also installing machinery and equipment for manufacture of toys, West 18th St. To exceed $28,500. **Maturity at once.**

★ **Pa., Pittsburgh**—STEEL PLANTS—United States Steel Corp. retained Ford, Bacon & Davis, Inc., 39 Broadway, New York, as consulting engineers for the proposed plant construction and improvement program. Estimated to cost $140,000,000.

S. C., Orangeburg—DISTRIBUTION PLANT, etc.—Belk-Hudson Co., Orangeburg, plans altering and repairing distribution plant, storage and department store. $55,000. Architect not appointed.

S. C., Spartanburg — PLANT — Rock Hill Printing & Finishing Co. soon lets contract plant addition, Rock Hill. $30,000 or more. Architect not disclosed.

Tex., Houston—MILL—Navigation Lumber Co., 4328 Navigation St., plans saw mill lumber, kilns, etc., 25,000 ft. daily capacity. To exceed $30,000.

Tex., San Antonio—PACKING PLANT—Reglin Provision Co., Altillo and Brazos Sts., plans by M. Eckenroth, Maverick Bldg., and soon takes bids (separate contracts), rein.-con., clay tile, stucco packing plant and fully equipping same, incl. killing plant, chilling room, beef cooler, rendering room, offices, rest room, etc., plain found. L. D. Royer, Smith-Young Tower, consult. engr., W. E. Simpson Co., Milam Bldg., structural engr.

W. Va., Logan—POWER PLANT—American Gas & Electric Co., 30 Church St., New York, N. Y., sketches steam-electric power plant, 100,000 kw. capacity.

Wis., Sheboygan—WAREHOUSE—E. A. Stubenrauch, archt., Sheboygan, soon lets contract, 2 story, 60x100 ft., brick, steel warehouse, plain found., for Schultz Bros. Co., Sheboygan.

B. C., Vancouver—PLANT—Kinetic Motor Development Ltd., V. McLean, secy., plans automobile manufacturing plant. $35,000.

Sask., Estevan—POWER PLANT—Dominion Electric Power Co., W. H. Schlosser, pres., plans constructing and equipping power plant, $55,000. W. H. Ross, ch. engr. Interested in prices of everything.

Sask., Regina — ASSAY — Athahaska Portal Gold Mining Co., Lt., O. E. Williams, engr., making plans and soon takes bids constructing 2 story, basement, 50x60 ft. assay building, and purchase necessary equipment.

Sask., Saskatoon — REFINERY — Associated Oil Refineries, Ltd., purchased site and plans constructing new oil refinery plant, 11th St.

BIDS ASKED

Calif., San Bernardino—SERVICE and GARAGE—See "Contracts Awarded."

Mont., Butte — MINING PROPERTY — See "Contracts Awarded."

Nev., Midas—MINING DEVELOPMENT—See "Contracts Awarded."

N. Y., Norwich—MILK PLANT—See "Contracts Awarded."

O., Cincinnati—MANUFACTURING PLANT—Palmer Co., St. Bernard, manufacturing plant, Reading, Rd., C. M. Sullivan & J. C. Grunkemeyer, 3717 Eastern Ave., archts., **taking** bids general and separate contract.

Wis., Milwaukee—MACHINE SHOP—H. J. Rotier, archt., 1638 South 26th St., taking bids 1 story, 35x120 ft. and 20x50 ft., concrete block, steel machine shop addition, plain found., North Holton St., for owner, c/o architect.

CONTRACTS AWARDED

Ark., Brinkley—SERVICE STATIONS—Sinclair Oil Co., 45 Nassau St., New York, owner and lessee, group of service stations, here and other locations, separate contracts now being awarded. To exceed $40,000.

Calif., San Bernardino—SERVICE and GARAGE—Andreson Co., 2 story, service and garage, 380 "F" St., day labor and separate contracts. To exceed $28,000 with equipment.

†Federal Government

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Industrial Buildings (Continued)

Conn., Bridgeport—FACTORY—W. V. Stapleton, general contractor, 604 West Taft Ave., structural steel in connection with construction 2 story, 40x80 ft., factory addition, to New England Iron Wks., 1351 Dixwell Ave., Hamden, for Casco Products Co., Railroad Ave. Noted Oct. 18, C.D.—Oct. 24, E.N.-R., under "Contracts Awarded."

Conn., Bridgeport—SERVICE STATION—E. and F. Constr. Co., general contractors, 78-94 Wells St., plumbing for 1 and 2 story, 40x150 ft. and 40x40 ft., brick, stucco, Main St., for Carp Oil Co., 240 Middle St., to N. Abriola, 631 West Taft Ave.***mill work, to City Lumber Co., Inc., 73 3rd St.***structural steel, to Porcupine Co., Post Rd., Fairfield***cast stone, to Mt. Vernon Cut Cast Stone Co., New York. Noted Oct. 1, C. D.—Oct. 24, E. N.-R., under "Contracts Awarded."

Conn., Greenwich—PLANT—Vuono Constr. Co., general contractors, Atlantic St., Stamford, heating, plumbing, ventilating, air conditioning and sheet metal for plant, to L. A. Hennessy, Railroad Ave., for Conde Nast Publications, Inc., Post Rd. Noted Oct. 14, C. D.—Oct. 17, E. N.-R., under "Contracts Awarded."

Conn., Hartford — FACTORY — Veeder-Root, Inc., G. Anthony, pres., Sargeant and Garden Sts., general contract 4 story, 42x165 ft., brick, rein.-con. addition, to R. G. Bent Co., 93 Edwards St. Est. $75,000. Private plans. Noted Oct. 18, C.D.—Oct. 24, E.N.-R.

Conn., Naugatuck—SERVICE REPAIR SHOP—G. Tremaglio Bros., general contractors, 1500 Highland Ave., Waterbury, electrical work for brick service unit, incl. repairing and showroom facilities, for Naugatuck Fuel Co., 76 Church St., to Swan Electric Shop, 169 Church St. Noted Sept. 6, C. D.—Sept. 12, E. N.-R., under "Contracts Awarded."

Conn., North Grosvenor Dale—MILL—Grosvenor Dale Co., 2 story, 45x60 ft., brick mill construction textile mill addition, to Carlson & Torell Co., 36 Pearl St., Hartford. Est. $28,500. Noted Oct. 23, C. D.

Ill., Chicago—SHOP—Murray Wolbach, 110 South Dearborn St., masonry and concrete contract for altering and constructing 5 story, basement, 29x143 ft. addition to shop building, 669 North Michigan Ave., to G. Sollitt Constr. Co., 109 South Dearborn St., Chicago. Est. $100,000. W. Sevic, 1900 Blue Island Ave., archt.

Ind., Anderson — FACTORY, etc. — Superior Ceramic Corp., 314 West 13th St., 1 story, 70x370 ft. factory, 1 story, 40x70 ft. clay bin, 1 story, 30x30 ft. office, steel, concrete, Fairview Ave. and Big Four R.R., to David Eshelman & Son, P. O. Box 937, $37,763. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

★ **Ind., Indianapolis**—FACTORY—Chevrolet Motor Co., 3044 West Grand Blvd., Detroit, Mich., (1st unit) factory, Henry St. and White River Blvd., to W. E. O'Neil Constr. Co., 2751 Clybourne Ave., Chicago, Ill. Total est. $1,000,000. Noted Sept. 30, C. D.—Oct. 3, E. N.-R.

Md., Baltimore—EMPLOYEES BUILDING—Schluderburg Kurdle Co., 4 story basement, 80x90 ft., employees building, 3800 East Baltimore St., to M. A. Long Co. About $75,000. Noted Oct. 4, C. D.—Oct. 10, E. N.-R.

Massachusetts—SUPER-SERVICE STATIONS—Atlantic Refining Co., 260 Broad St., Phila., Pa., to Frankini Constr. Co., 30 Mystic Ave., Medford, constructing three 1 story, brick super-service stations, concrete founds., etc., as follows: Central Ave., Hyde Park, Centre St., Jamaica Plain and Highland Ave., Needham. Total est. exceeds $40,000.

Mass., Lynn — POWER PLANT — Stone & Webster Eng. Corp., contractors, 90 Broad St., New York, pile driving in connection with construction of steam electric power plant addition, to Seaboard Constr. Co., 201 Marginal St., Chelsea, for Lynn Gas & Electric Co.***structural steel, to New England Structural Co., 310 2nd St., Everett***boiler, to Riley Stoker Corp., 27 State St., Boston. Noted Oct. 24, C. D.—Oct. 24, E. N.-R.

Mass., Salem—BUS GARAGE—Eastern Mass. Street Railway Co., 38 Chauncy St., Boston, iron in connection with construction 1 story, 120x180 ft., brick, steel bus garage, to New England Structure Co., 310 Second St., Everett***steel windows, to Truscon Steel Co., 38 Chauncy St., Boston***plumbing, to John F. Cabeen Co., 81 North St., Salem***light iron, to Groisser & Schlager Iron Wks., 84 Wash St., Somerville***reinforcing steel, to Morrison Stevens Co., 6 Beacon St., Boston. Noted Sept. 10, C.D.—Sept. 12, E.N.-R., under "Contracts Awarded."

Minn., St. Paul—PACKING PLANT—Superior Packing Co., 2125 Wabash Ave., general contract 3 story, basement, rein.-con., steel, cast stone addition and alterations to packing plant, to J. P. Hagstrom, 1943 Juliet St. Est. $70,000.

Montana—MINING DEVELOPMENT — Anaconda Copper Mining Co., Butte, and 25 Bway., New York, N. Y., reconditioning copper mining properties at St. Lawrence Mine in the vicinity of Butte, separate contracts and day labor. Separate contracts awarded. To exceed $30,000.

Mont, Butte — MINING PROPERTY — Anaconda Copper Mining Co., reconditioning mining property at Leonard Mine, separate contracts and day labor. To exceed $30,000.

Nev., Midas — MINING DEVELOPMENT — Gold & Silver Circle Mines, Inc., c/o N. H. Getchell, Battle Mountain, developing mining property, day labor and separate contracts. $100,000. Noted Oct. 4, C. D.—Oct. 10, E. N.-R.

N. J., Hoboken — PLANT — Davis Baking Powder Co., 38 Jackson St., pant addition, to Walter Kidde Constructors, Inc., 140 Cedar St., New York, N. Y. Est. exceeds $50,000. Contractor awarded contract about 350 tons structural steel, to Ingalls Iron Wks., Verona, Pa.

N. J., Kearny—PLANT, etc.—Newark Plaster Co., 65 Bridge St., Newark, awarded contract plant and storage building, Jacobus Ave. and Lincoln Highway, to Industrial Eng. Co., 50 Church St., New York, N. Y. Est. $280,000. F. V. Budell, 50 Church St., New York, archt.

N. Y., Albany—FACTORY—A. P. W. Paper Co., 1275 Bway., structural steel for factory, to James McKinney & Son, 925 Bway. Total est. $500,000. Noted Oct. 22, C. D.—Oct. 24, E. N.-R.

N. Y., Buffalo—FACTORY—Trico Products Corp., 817 Washington St., general contract factory, Washington St., to Crooker Carpenter & Skaer, Inc., 120 Hardwood Pl. Est. $40,000. General contractor awarded contract for roofing, to Philip Christman & Sons Co., Inc., 854 Virginia St., Buffalo; plastering and lathing, to G. E. Hudson Plastering Co., 605 East Ferry St. Bids Sept. 18. Noted Sept. 11, C. D.—Sept. 19, E. N.-R.

N. Y., Buffalo—GRAIN DRYER—McKenzie Hague Co., general contractors, 422 Corn Exch. Bldg., Minneapolis, Minn., reinforcing steel for grain dryer, for Archer Daniels Midland Co., 1124 Midland Trust Bldg., Buffalo, to Sweets Steel Co., Williamsport, Pa.; structural steel, to H. Grimp Co., Buffalo Ave., Chicago, Ill. Noted Sept. 17, C. D.—Sept. 19, E. N.-R., under "Contracts Awarded."

N. Y., Buffalo—FACTORY—Globe woven Belting Co., Inc., 1396 Clinton St., plumbing for factory, 1396 Clinton St., to J. J. Kavany, 231 Terrace St., Buffalo***heating, to O. F. Ryan & Sons, 45 Southampton St.***electrical work, to McCarthy Bros. and Ford, 75 West Mohawk St.***sprinkler system, to Grinnell Co., Dun Bldg. Noted Oct. 14, C. D.—Oct. 17, E. N.-R., under "Contracts Awarded."

N. Y., New York—PLANT—J. H. Deeves & Bros., general contractors, 103 Park Ave., 300 tons structural steel for warehouse, for Washburn Wire Co., Harlem River, to Jones & Laughlin Steel Corp., 3rd and Ross Sts. Noted July 18, C.D.—July 25, E.N.-R., under "Contracts Awarded."

N. Y., New York—STORAGE, etc.—R. E. Knapp & M. L. Hoyt, 136 East 61st St., or c/o Johnson & Porter, archts., 6 East 46th St., heating, electric, sprinkler system in storage and apartments, 132 East 24th St., to Birdwell Constr. Co., 141 West 42nd St. Est. $28,000.

N. Y., Niagara Falls — FACTORY — W. S. Johnson Building Co., general contractors, 2532 Hyde Park Blvd., Niagara Falls, roofing for factory, Buffalo Ave., for Acheson Graphite Co., Buffalo Ave., to E. J. Eddy, Inc., 17 Terrance Pl., Buffalo; structural steel, to R. S. McMannus Steel Constr. Co., 1254 East Ferry St., Buffalo. Noted Oct. 18, C. D.—Oct. 24, E. N.-R., under "Contracts Awarded."

N. Y., Norwich—MILK PLANT — Sheffield Farms Product Co., Inc., Norwich, and 524 West 57th St., New York, milk plant, Woods Corners, own forces. $35,000. Private plans.

N. Y., Rochester — FACTORY — C. Bippers, general contractor, 265 Spencer Rd., Rochester, masonry work, incl. concrete, stone, hollow tile and plastering for factory, Maple St., for Will Corp., 845 Maple St., to Luke & Sohn, Inc., 219 Glenn Ellyn Way, Rochester; structural steel, to Genesee Bridge Co., 344 West Ave. Noted Oct. 17, C. D.—Oct. 24, E. N.-R., under "Contracts Awarded."

O., Cincinnati—TANNERY—Julius Freiberg Realty Co., c/o Wolfstein Tannery, lessee, Dunlop St., altering and extending tannery, reconditioning heating, elevators, etc., Dunlop St., to M. Marcus Building Co., 2109 Redding Rd.

O., Cleveland — FACTORY, etc. — Triplex Screw Co., A. F. Weber, mgr., 5317 Grant Ave., 1 story, 90x240 ft. factory and warehouse, 5317 Grant Ave., separate contracts awarded. Est. $110,000. Concrete work, to C. M. Schimmelman, 1643 Lee Rd.; structural steel, to Republic Structural Iron Wks. Noted Oct. 14, C. D.—Oct. 17, E. N.-R.

O., Cleveland—FACTORY—Marquette Metal Products Co., 1145 Galewood Ave., 1 story, 60x179 ft., factory addition, to Lundoff-Bicknell Co., 1228 Terminal Tower. Est. $40,000. H. J. Hassler, Electric Bldg., engr. Awarded Oct. 20.

O., Columbus — FACTORY — Automatic Reclosing Circuit Breaker Co., 1304 Indianola Ave., to F. L. Mattheas, 427 East Dunedin Ave. Est. $75,000. Noted Sept. 18, C. D.—Sept. 26, E. N.-R.

O., Dayton—PLANT—Duriron Co., 450 North Findlay St., plant addition, separate contracts awarded. To exceed $30,000. Structural steel, to Burger Iron Co., 1615 Springfield St. Noted Oct. 4, C. D.—Oct. 10, E. N.-R.

Ore., Lakeview—PLANT—Lakeview Sash & Door Co., constructing plant, separate contracts awarded. $28,000 or more.

Pa., Langeloth—PLANT — Climax Molybdenum Co., 500 5th Ave., New York, altering and constructing additions to plant, to Rust Eng. Co., Clark Bldg., Pittsburgh. Est. $100,000. Contractor awarding separate contracts. Private plans.

Pa., Pittsburgh—DAIRY—Dairymen's Milk Co., Saw Mill Run Blvd., brick, steel dairy building, Saw Mill Run Blvd., to Simon-Sherman Co., 6083 Carnegie Ave., Cleveland, O. Est. $75,000. McCormick Co., 121 South Negley Ave., archts.

R. I., Greenville—MILL—Greenville Finishing Co., general contract brick mill addition, to H. M. Soule, 110 Brook St., Pawtucket. Est. $30,000. C. R. Makepeace & Co., 904 Grosvenor Bldg., Providence, archts.

R. I., Pawtucket—PLANT—J. P. Flynn, general contractors, 112 Lenox Ave., Providence, elevator for meat packing plant, to George T. McLaughlin Co., 120 Fulton St., Boston, Mass., for Colfax Packing Co., 34 Colfax St.***electrical work, to Stamford Electric Co., 4 Westminster St., Providence***heating, to Bassett & Co., 10 Meeting St.***boilers, to Bigelow Co., 92 River St., New Haven, Conn. Noted July 25, C. D.—Aug. 1, E. N.-R., under "Contracts Awarded."

R. I., Providence—COAL PLANT—G. P. Carver Eng. Co., engrs., 114 State St., Boston, Mass., dredging in connection with construction of coal terminal, for Old Colony Coal & Wharf Co., 114 State St., Boston, Mass., to Merritt, Chapman & Scott Corp., 292 Pequot Ave., New London, Conn. Total $35,000. Noted Oct. 7, C. D.—Oct. 10, E. N.-R.

R. I., Providence — MILL — Franklin Rayon Corp., 86 Crary St., brick, steel rayon plant, to A. F. Smiley Constr. Co., 202 Oak Hill Bldg., Pawtucket; electrical work, to New England Machine & Electric Co., 77 Bayley St., Pawtucket.

Wis., Chilton—FACTORY — Aluminum Specialty Co., Manitowoc, awarded contract constructing 2 story, 60x65 ft., brick, steel, rein.-con. factory addition, plain found., to Kasper Constr. Co., Manitowoc.

Wis., La Crosse—FACTORY—Allis Chalmers Mfg. Co., Southern Bldg., Milwaukee, 1 and 2 story, 150x300 ft. addition, to Worden-Allen Co., Port Washington Rd. $75,000. Noted Oct. 2, C. D.—Oct. 10, E. N.-R.

B. C., Vancouver — FACTORY — Canadian White Pine Co., Ltd., constructing 1 story, 80x732 ft. veneer factory, wood pile found., Kenrose St., Fraser River. $125,000. Owner builds. Noted Oct. 16, C. D.—Oct. 24, E. N.-R.

Ont., Brantford—Rockwood Corp. of Canada, subsidiary of General Insulating Mfg. Co. of Alexandria, Ind., abandoned plans to construct a factory at Oshawa, and have purchased factory building here, and will make minor alterations and install machinery by their own staff. Noted Aug. 29, C. D.—Sept. 5, E. N.-R., under **Oshawa.**

Ont., Ingersoll — PLANT — R. G. Wilson & Son, general contractors, College St., London, painting factory for Ingersoll Cream Cheese Co., Ltd., to W. T. Pace & Sons, 251 Ridout St. Noted Sept. 5, C. D.—Sept. 12, E. N.-R.

Ont., Toronto—REFINERY — Dickie Constr. Co., Ltd., general contractors, 17 Yorkville St., plumbing for 1 story refinery for gold, to Harry Porter, 193 Bingham Ave.; heating, to R. Steen, 9 Grimthorpe Rd., for Handy & Harman of Canada, Ltd., c/o 82 Fulton St., New York, N. Y. Noted Sept. 20, C. D.—Sept. 26, E. N.-R.

†*Federal Government.*

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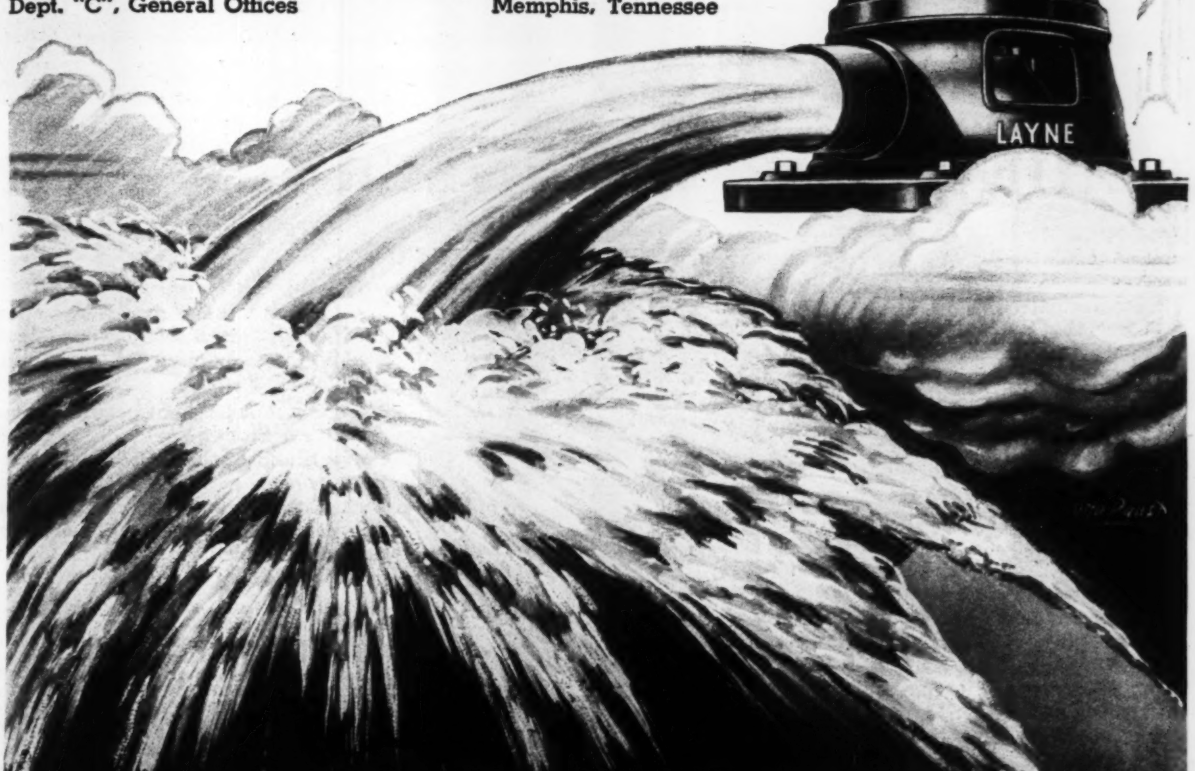

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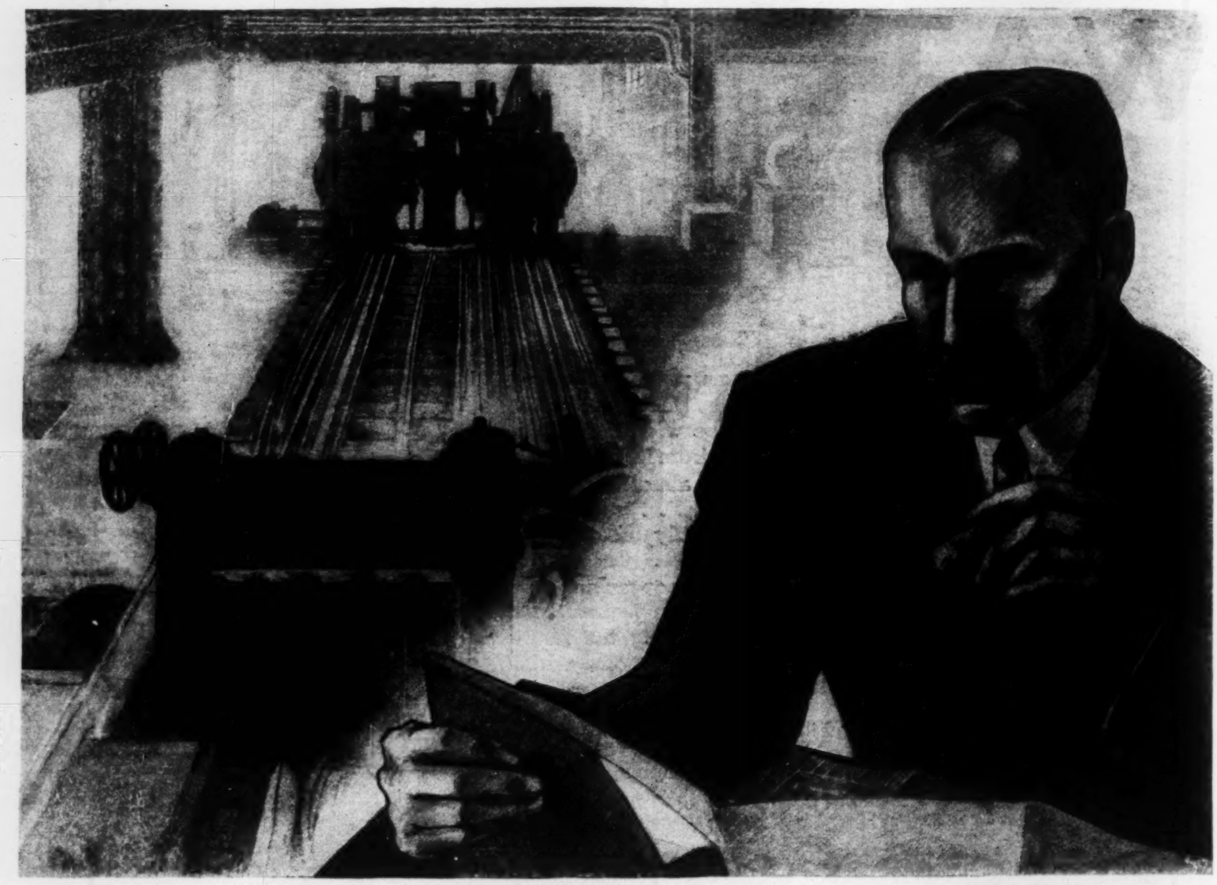

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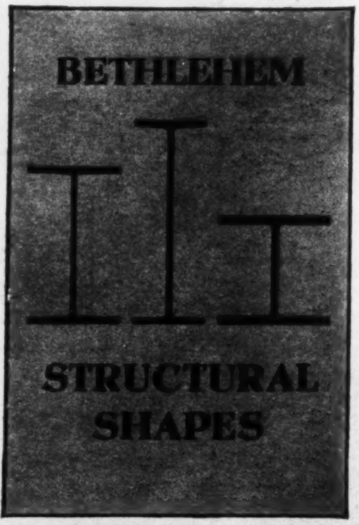

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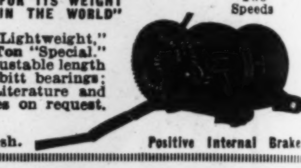

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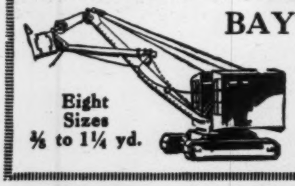

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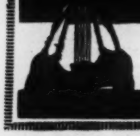

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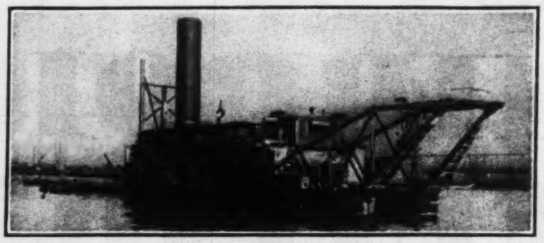

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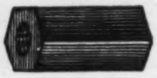

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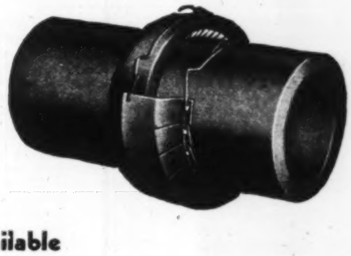

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OFFICIAL PROPOSALS

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School

Memphis, Tenn.

Sealed proposals for the construction of Twelve Room Addition to Manassas School for the Board of Education of the Memphis City Schools, Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1023,

will be received by the Board of Education of the Memphis City Schools, at the office of the Secretary, 317 Poplar Avenue, until 3:00 p.m., on the 5th day of November, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119 Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Bidder and a Surety Company satisfactory to the Public Works Administration in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A.

Proposal form must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on projects financed in part or in whole with P.W.A. funds, the bidder MUST execute the certificate that the fully understands the penalty clause as set out in Penalty for False Certification included in the specifications.

All work executed and all materials furnished shall conform to the Rules and Regulations of the Federal Emergency Administration of Public Works.

This project is being financed from funds to be furnished by the United States Government, and failure of the City of Memphis to receive the requisite funds from the Government, relieves said City and its officials and representatives from any responsibility, damage or lsss due to the taking of bids.

The funds available for construction purposes of this project are $65,047.26.

The right is reserved to reject any and/or all bids and to waive informalities therein.

W. J. PRESCOTT, President,
Board of Education of
Memphis City Schools.

ATTEST:
E. C. BALL, Secretary.

Water Works Plant and Extensions

P.W.A. DOCKET NO. N. J. 1150
POINT PLEASANT BOROUGH,
NEW JERSEY

Attention is directed to advertisements appearing in the Ocean County Leader, Point Pleasant, New Jersey, and Asbury Park Evening Press, Asbury Park, New Jersey, under dates of October 25, and November 1, 1935, respectively, inviting proposals for furnishing material and labor for completion of Schedule A; Two Deep Wells with Pumping Equipment; Schedule B, Two Pump Houses; Schedule C, one 200,000 gallons capacity Elevated Storage Tank; Schedule D, 20,000 lineal feet of 4"-6"-8"-10"-12" water mains and appurtenances, for the Borough of Point Pleasant, New Jersey. Full information can be obtained from the office of J. D. Humphries, Consulting Engineer, Hayes Building, Point Pleasant, New Jersey, where specifications for the above contracts may be obtained upon a deposit of $15.00 per set.

JOSEPH SHERMAN,
Borough Clerk.

OFFICIAL PROPOSALS

Bids: November 14, 1935.

Sewer System

Lawrenceburg, Indiana.

Sealed proposals for a sewer system will be received by the City of Lawrenceburg, Indiana, by City Clerk until 2:00 p.m., C. S. Time, November 14, 1935, in accordance with the plans and specifications on file with the City Clerk or available from Charles Brossman, Engineer, Chamber of Commerce Building, Indianapolis. Said system comprises 1,668 feet Cast Iron sewer 8 to 14 inches and 36,264 feet of vitrified sewers from 12" to 6" including locals, laterals, service connections.

Proposals must be executed on forms furnished by Engineer accompanied by State questionnaire forms and each proposal must be accompanied by certified check or acceptable bidder's bond of not less than 5% of the bid price.

Contractor will be required to furnish surety company bond in amount of 100% to remain in effect for period of one year and to include maintenance clause.

Work is to be done under terms and conditions of National Industrial Recovery Act and subject to all its conditions and regulations, and in accordance with terms of grant agreement between the Federal Government and the City of Lawrenceburg now on file with the City.

Wage rates to be not less than the prescribed scale as approved by the Federal Government.

City reserves the right to reject any or all bids, or accept such bid as is most advantageous to the City. Bidder may not withdraw his bid for a period of thirty (30) days after opening bid and shall also inform themselves as to all conditions of construction and labor for said work.

Full information, plans are on file at the office of the City Clerk, Lawrenceburg, Indiana, or may be obtained from the engineer at Indianapolis upon deposit of $15.00, one half amount of which will be refunded if plans are returned within thirty (30) days.

By order Common Council, Lawrenceburg, Indiana.

H. E. HERRICK, City Clerk.
October 22, 1935.

Bids: November 5.

Highway Construction

Memphis, Tenn.

Sealed proposals for the construction of Highland Avenue Improvement for the City of Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1013,

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk (204 Court House), until 2:30 p.m. on the 5th day of November, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119 Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Bidder and a Surety Company satisfactory to the Public Works Administration in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A.

Proposal form must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on pojects financed in part or in whole with P.W.A. funds, the bidder MUST execute the certificate that he fu understands the penalty clause as set in Penalty for False Certification inclu in the specifications.

OFFICIAL PROPOSALS

All work executed and all materials f nished shall conform to the Rules and R ulations of the Federal Emergency Adm istration of Public Works.

This project is being financed from fun to be furnished by the United States Go ernment and failure of the City of Me phis to receive the requisite funds from t Government, relieves said City and it off cials and representatives from any respo sibility, damage or loss due to the takin of bids.

The funds available for construction pu poses of this project are $181,427.46.

Approximate Quantities are as follows

35,000	Cu.Yds. Excavation
37,500	Sq.Yds. Sodding
236	Trees Removed
500	Sq.Ft. Concrete Water Table Constructed
500	Sq.Ft. Concrete Water Table Removed
18,560	Sq.Ft. Concrete Driveway Constructed
14,427	Sq.Ft. Concrete Driveway Remove
8,000	Sq.Ft. Concrete Sidewalk Constructed
2,250	Sq.Ft. Concrete Sidewalk Remove
950	Lin.Ft. Concrete Steps Constructe
560	Lin.Ft. Concrete Steps Removed
1,560	Lin.Ft. 6"x12" Concrete Coping Constructed
600	Lin.Ft. Concrete Coping Remove —6"x12"
100	Cu.Yds. Concrete in Retaining Wall
800	Lin.Ft. Concrete Post & Wire Fenc Removed and Reset
35,500	Sq.Yds. Concrete Paving (8-6-8)
	Hedges and Shrubs removed and replanted
100	Lin.Ft. 6'x9' Concrete Culvert Constructed
90	Lin.Ft. 3'x5' Concrete Culvert Constructed
185	Lin.Ft. 3'x3' Concrete Culvert Constructed
500	Cu.Yds. Culvert Excavation
30	Lin.Ft. 24" Reinforced Conc. Pip Furnished and Laid
1,940	Lin.Ft. Conc. or Vitrified Pipe Furnished and Laid
700	Lin.Ft. Corrugated Metal Pipe Furnished and laid
12	Cu.Yds. 1:3:6 Concrete in Headwalls
10	Inlets Constructed
3	Masonry Junctions
1	Drain Manhole
79	Lin.Ft. Old Pipe Removed
2,000	Sq.Yds. Gravel Driveway Replaced
1,000	Lin.Ft. 6" Sewer Pipe Furnished and Laid
200	Lin.Ft. 8" Sewer Pipe Furnished and Laid
2	Std. Sewer Manholes 4' Diameter
10	Vertical Ft. Additional 4' diameter M.H. Depth

The City reserves the right to reject any and/or all bids, and to waive informalities therein.

WATKINS OVERTON, Mayor.

ATTEST:
D. C. MILLER, City Clerk.

U. S. Government

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., December 2, 1935, for the *construction of Project 181,* 9.00 miles of road in the Shenandoah Great Smoky Mountains Parkway, from Tuggle Gap to Rock Castle Gap, Floyd and Patrick Counties, Virginia, involving major items of 24 acres clearing and grubbing; 311,000 cu.yd. excavation; 130,000 sta.yd. overhaul; 32,000 tons crushed stone surfacing; 450 cu.yd. cement concrete; 32,300 lb. reinforcing steel; 1,550 cu.yd. cement stone masonry; 4,950 lin.ft. cast iron culvert pipe or reinforced concrete pipe; 750 lin.ft. 6-10 inch vitrified tile underdrain; 64 drop inlets; 17,500 cu.yd. stripping and storing topsoil; and 17,500 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00, cash or certified check, will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N.W., Washington, D. C., or the Bureau of Public Roads, Roanoke, Virginia. H. J. Spelman, District Engineer. (1718)

U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935. —Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 22, 1935, for furnishing all labor and materials and performing all work for the *construction of the U. S. P. O. at St. Charles, Ill.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chamber of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (1811)

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935.—sealed bids in duplicate will be publicly opened in this office at 1 p.m., Dec. 5, 1935, for furnishing all labor and materials and performing all work for *construction (except elevators and mail handling) of the U. S. Postal Station at Madison Square, New York, N. Y.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works as modified by the specification. Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (1812)

UNITED STATES ENGINEER OFFICE, Room 710, Army Building, 39 Whitehall St., New York, N. Y.—Sealed bids will be received here until 12 M., November 19, 1935, and then publicly opened, for furnishing all labor and materials and performing all work for *dredging* approximately 800 cubic yards of material other than ledge rock and approximately 4,000 cubic yards of ledge rock in *East Chester Creek, N. Y.* (183)

TENNESSEE VALLEY AUTHORITY, Knoxville, Tennessee.—Sealed bids, in duplicate, will be received until 10 a.m., Central Standard Time, November 19, 1935, and then publicly opened, for furnishing and delivering *Control Battery Charging Sets* for Norris and Wheeler Power Plants. Bidding documents, for which there is no charge, available October 29, 1935, at the above office. C. H. GARITY, Director of Purchases. (182)

UNITED STATES ENGINEER OFFICE, 615 Commerce Bldg., St. Paul, Minnesota.—Sealed bids for the *construction of Onalaska Dam in the Black River at Onalaska, Wisconsin,* will be received in this office until 11:00 a.m., November 21, 1935, and then publicly opened. Further information upon application. (186)

OFFICIAL PROPOSALS

Bids: November 19.

Sewers

NASHVILLE, TENNESSEE

Sealed proposals or bids will be received by the Board of Public Works of the City of Nashville, Tennessee, at the office of the City Clerk, City Hall, until ten (10) o'clock a.m., on TUESDAY November 19, 1935, for furnishing of all materials, labor, tools and appliances necessary or proper for constructing sewers, complete, and said proposals or bids will be opened and publicly read.

PWA DOCKET NO. 6109
GROUP "C"

2. The proposed work shall comprise the following contract:

GROUP "C" SHALL BE ONE CONTRACT and contains the following approximate quantities:

20,201	cu.yds. common excavation.
4,282	cu.yds. rock excavation.
100	lin.ft. 36" standard corrugated metal pipe.
790	lin.ft. 24" standard corrugated metal pipe.
2	24"—¼ corrugated metal bends.
3,531	lin.ft. 15" vitrified clay pipe.
3,040	lin.ft. 12" vitrified clay pipe.
11,115	lin.ft. 10" vitrified clay pipe.
43,438	lin.ft. 8" vitrified clay pipe.
100	lin.ft. 6" vitrified clay pipe.
1	15"x12" vitrified clay wye.
2	15"x10" vitrified clay wyes.
1	12"x10" vitrified clay wye.
1	10"x 8" vitrified clay wye.
149	10"x 6" vitrified clay wyes.
1,750	8"x6" vitrified clay wyes
2	10"—⅛ vitrified clay bends.
2	8"—⅛ vitrified clay bends.
75	cu.yds. Class "C" concrete.
317	Standard manholes complete—0' to 6' deep.
33	Standard manholes complete—6' to 8' deep.
7	Standard manholes complete—8' to 10' deep.
3	Standard manholes complete—10' to 12' deep.
1	Standard manhole complete—12' to 14' deep.
8	24"x48" alley grates complete, including all brick, castings, and incidentals in place.
6	32" catch basins complete, including all brick, castings, and incidentals in place.

3. Copies of the proposals, contract documents, plans and specifications may be obtained from the office of the City Engineer, Room No. 10, City Hall, Nashville, Tennessee.

A charge of seventy-five ($75.00) dollars in the form of a certified check, made payable to the City of Nashville, Tennessee will be made for each set of plans and specifications which will be returned to unsuccessful bidders upon return of plans and specifications in good condition within five (5) days after the award of the contract or rejection of bids.

Each proposal or bid must be accompanied by a cashier's or certified check on a National Bank made payable to the City of Nashville, Tennessee or a bidding bond executed by the bidder and a surety company authorized to transact business in the State of Tennessee and satisfactory to the Public Works Administration, for the sum of not less than five (5%) per cent of the total amount of the bid. Said check or bond will be returned to the unsuccessful bidder upon award of contract or rejection of bids and to the successful bidder when he, it or they shall have entered into contract and faithful performance of said contract properly secured for the full amount of the contract price. Should the successful bidder fail to furnish said bond and execute the contract within ten (10) days after the notice of acceptance of his proposal the five (5%) per cent bid check or bidders bond, will be forfeited to the City as liquidated damages. The successful bidder will be required to execute an additional labor bond as required by PWA.

4. Proposal form must be properly filled out and must not be detached from these specifications.

5. All bidders must be licensed contractors so required by Chapter 70 of the Public Acts of 1931 of the General Assembly of the State of Tennessee, Section 1. Bidders name and license number must be placed on the envelope containing these documents.

6. Attention is called to the fact that not les than the minimum wage rates prescribed by the Federal Emergency Administration Works must be paid on these projects.

7. All work executed and all materials shall conform to requirements of the plans and specifications and to the regulations of the Federal Emergency Administration of Public Works.

8. In bidding on projects financed in part or in whole with PWA funds, the bidder MUST execute the certificate that he fully understands the penalty clause as set out in Penalty for False Certification.

9. Attention is called to Federal Administration of Public Works form P. W. 39977 that unless contrary to applicable law, all advertisements for bids approved after the date of the receipt of this order shall provide that no bidder may withdraw his bid for a period of thirty days after the date set for the opening thereof.

10. Bids will be received subject to full and complete financing by the City of Nashville, Tennessee jointly with or entirely by the United States Government.

11. The City of Nashville, Tennessee, through its Board of Public Works, reserves the right to reject any and/or all bids, to waive any informalities in the bids received and to accept any bid, which, in its opinion, may be for the best interest of the City. Award of contracts is subject to the approval of the Federal Emergency Administration of Public Works.

HILARY E. HOWSE, Mayor,
The City of Nashville, Tennessee.

Attest:
S. H. McKAY,
City Clerk.

Bids: November 8.

Water Distribution System

P.W.A. PROJECT, DOCKET 1006
SHARPTOWN, MARYLAND

Sealed proposals will be received by the Commissioners of Sharptown at their office located in the Municipal Bldg. at Sharptown, Md., until 8:00 p.m., Friday, November 8, 1935, at which time and place the bids will be publicly opened and read for contracts involving the following items:

CONTRACT NO. 1 — Construction of an 8-inch Open End Type Well

CONTRACT NO. 4—Erection of a 100,000 gallon Elevated Steel Storage Tank

CONTRACT NO. 5—Construction of Water Distribution Line and Service Connections with the following approximate quantities: 10,800 lin.ft. 6-inch, 6,200 lin.ft. 8-inch, 125 lin.ft. 10-inch Cast Iron Mains; 7.5 tons Special Castings; 42 6-inch Gate Valves, 12 8-inch Valves, 1 10-inch Valve; 24 Hydrants; 175 ¾-inch Service Connections complete (3,800 lin.ft.); 1,500 lin.ft. 2-inch Water Service Lines.

The work contemplated under these contracts will be done with the aid of funds obtained from the Federal Emergency Administration of Public Works under the Emergency Relief Appropriation Act of 1935 and the bidders must comply with all rules and regulations prescribed in PWA Form 166 with subsequent amedment thereto (PWA Form 203).

Attention of bidders is called to the minmum wage scales as described in Construction Regulations (PWA Form 180, dated July 22, 1935).

Bidders are required to bid on each contract separately. Certified checks shall accompany each bid in the following amounts: Contract No. 1: $100; Contract No. 4: $500; Contract No. 5: $1,000. All checks to be made payable to the Commissioners of Sharptown.

Plans, specifications and proposal forms may be examined at the office of the Commissioners of Sharptown or may be obtained from Clarke Gardner, Consulting Engineer, Salisbury, Marylond, on deposit of $3.00 for Contracts 1 and 4, and $6.00 for Contract 5. A refund, in the amount of one-half of total deposit, will be made to bona fide bidders provided plans and specifications are returned intact within 30 days after date of the opening of bids.

The Commissioners of Sharptown reserve the right to retain the certified checks and bids for a period of thirty days before making an award. The right is further reserved to eject any and all bids and to waive technicalities as the interest of the Commissioners may require.

COMMISSIONERS OF SHARPTOWN, MD.
J. L. COOPER, Secretary.

CLARGE GARDNER,
Consulting Engineer,
Salisbury, Maryland.

OFFICIAL PROPOSALS

Bids: November 13.

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, Albany, N. Y., until one o'clock p.m. on Wednesday, November 13, 1935, for the construction and reconstruction of highways and bridges, in the following counties, in accordance with the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11-74th Congress)

Construction County	Deposit Required
CHAUTAUQUA (40'-60'-70' M.M.O.: 0.34 mile)	$ 2,600
CHENANGO (120' Truss Br. 20' Gr. App.: 2.01 miles)	7,000
LEWIS (20' Bit. Gravel Mixed in Place: 2.72 miles)	5,000
Reconstruction	
CHAUTAUQUA (20' & 30' Concrete 2 Course, 6" Min. to 8": 6.81 miles)	25,000
JEFFERSON (100' Truss, Grav. Appr.: 1.02 miles)	3,000
MONROE (Concrete—20' 8" & 8-7-8: 3.02 miles)	10,000
(2) (40' 8": 0.11 mile)	900
ORANGE (Grad & 30' & 42' Concrete 8", including Cantilever Br.—One 327' span; two 136' spans & Triple Steel Arch Br. Total span 491': 0.97 mile)	30,000
SCHUYLER (20' M.M. 3 incl. 40' & 50' I-Beans: 1.14 miles)	5,400
SUFFOLK (40' & Var. Conc. 9": 0.11 mile)	750

Sealed proposals will also be received by the State Department of Public Works, Division of Highways, on Friday, November 15, 1935, at 1 o'clock p.m., for construction and reconstruction of the following highways and bridges:

Construction	
BRONX (Prel. Grading incl. two span rigid frame: 0.26 mile)	18,000
CAYUGA (Bit. Mac. M.M. Type 2: 0.78 mile)	2,500
DELAWARE (12' slab, 10' slab, Creos. Wood Trestles, two 13' spans two 17' spans, three 15' spans, three 13' spans 20' slab)	1,500
GENESEE (32' Bit. Mac. M.M. Type 3: 0.63 mile)	2,300
GREENE (20' & Var. Conc. 8" incl. I-Beam Br. 59' 4" span with ten 36' 3" Appr. spans: 0.51 mile)	9,300
ONONDAGA (18' Gravel: 3.74 miles)	2,900
QUEENS (Storm Sewer System & Misc. Work.)	1,500
SCHUYLER (16x10, 16x8, 16x10, 16x8 Closed Box Conc. slabs 20', 24' & (34' I-Beam, Timber floor)	4,000
Reconstruction	
ERIE (Concrete: 3.27 miles)	7,000
SUFFOLK (Concrete Pile Bent Trest. 10-39' spans Conc. appr.: 0.38 mile)	13,500

Maps, plans, specifications, and estimates may be seen and proposal forms obtained at the office of the Division of Highways in Albany, N. Y., and at the office of the District Engineers in whose district the roads are located, upon the payment of Five Dollars ($5.00) for plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Bldg., Worth & Center Sts. New York City. No refund will be made on plans, specifications or proposal forms. The addresses of the District Engineers and Counties in each district will be furnished upon request.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions covering sub-letting or assigning the contract and to the use of domestic materials, when let under the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11-74th Congress) for the purpose of providing employment and hastening industrial recovery.

Proposal for each highway or contract must be submitted in a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the New York State Department of Public Works, Division of Highways, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Subdivision 2 of Section 130 of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Sec. 130 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten percentum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance to the Highway Law, the amount of the bidding check will be returned when fifteen percentum of the contract work has been completed.

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows:

In New York City: Skilled Labor, eighty cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Nassau, Rockland, Suffolk and Westchester: Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Dutchess, Orange, Putnam, Ulster and Sullivan, seventy-five cents per hour for Skilled Labor; Intermediate Grade Labor, Fifty-five cents per hour; Unskilled Labor, fifty cents per hour; and in all other counties other than above, Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, forty-five cents per hour.

The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Subdivision d, of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

FRED'K STUART GREENE,
Supt. State Dept. Public Works.

Standpipe, Etc.

TOWN OF NORTHBRIDGE, MASSACHUSETTS

P.W.A. Project No. Mass. 1119

Attention is directed to advertisements appearing in the *Boston Globe*, Boston, Mass., and the *Worcester Telegram*, Worcester, Mass., under date of October 25 and November 1 respectively, inviting proposals for furnishing and laying cast iron pipe and appurtenances and building a standpipe for the Town of Northbridge, Mass. Full information can be obtained from the office of Metcalf & Eddy, Engineers, 1300 Statler Building, Boston, Mass., where plans and specifications for the above contract may be obtained upon deposit of $10.

TOWN OF NORTHBRIDGE, MASS.
By METCALF & EDDY, Engineers.

U. S. Government

PROCUREMENT DIVISION, Public Wor Branch, Washington, D. C., Oct. 22, 193 —Sealed bids in duplicate will be publi opened in this office at 1 p.m., Nov. 1935, for furnishing all labor and ma rials and performing all work for *constru tion of the U. S. P. O. at Lamar, Co* Attention is directed to the special con tions of bidding set forth in the specifi tions, and bulletin No. 51 (revised) of t Federal Emergency Administration of Pu lic Works. Upon application, one set drawings and specifications will be suppli free to each general contractor interest in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chamber of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (1810)

OFFICE, CONSTRUCTING QUARTERMASTER, Fort Reno, Oklahoma, October 16, 1935.—Sealed proposals in triplicate will be received by this office until 10:00 o'clock a.m. C.S.T., November 15, 1935, and then publicly opened for the *Construction of one (1) Set of Field Officers Quarters at Fort Reno, Oklahoma.* A deposit of $10.00 will be required on Plans and Specifications. For further information apply to CONSTRUCTING QUARTERMASTER, Fort Reno, Oklahoma. (1813)

U. S. ENGINEER OFFICE, Mobile, Ala.—Sealed bids, in duplicate, for supplies, services, buildings, or work, for *construction of Crest Gates* on Dam No. 17, Black Warrior River, Alabama, subject to the applicable conditions of U. S. Government Form No. P.W.A. 51, revised July 18, 1934, as modified and approved by the Works Progress Administration June 7, 1935, and the specifications covering the project, will be received at this office until 11:00 a.m., November 20, 1935, and then publicly opened. Further information on application. (1818)

D. C. Government

COMMISSIONERS, D. C., Washington, October 26, 1935.—Sealed proposals will be received at room 509 District Building until 2:00 o'clock p.m., November 20, 1935, and then publicly opened, for constructing a *steel and concrete underpass* in the line of Eastern Avenue, N.E., between Olive Street and Minnesota Avenue under the right-of-way of the Pennsylvania Railroad and Baltimore & Ohio Railroad. The attention of bidders is directed to the Special Provisions covering subletting or assigning the contract and to the use of Domestic Materials. The minimum wage paid to all skilled labor employed on this contract shall be not less than one dollar ($1.00) per hour. The minimum wage paid to all intermediate labor employed on this contract shall be not less than sixty cents ($0.60) per hour. The minimum wage paid to all unskilled labor employed on this contract shall be not less than forty cents ($0.40) per hour. All prospective bidders are hereby notified that any bid submitted in response to this advertisement must be accompanied by a statement of facts in detail of the business and technical organization of the bidder available for the contemplated work, including his financial resources. The Commissioners expressly reserve the right to reject any bid in which the facts as to the business and technical organization, financial resources or experience compared with the project bid upon and based upon past known performance of the bidder justify such rejection. Certified check for $10.00, payable to Collector of Taxes, D. C., to insure return of specifications and drawings in good condition should accompany application to Chief Clerk, Engr. Dpt., Room 427 District Building. The Director of Re-employment for the District of Columbia is Mr. Edgar B. Young, 480 Indiana Avenue N.W., Washington, D. C. (184)

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Washington, D. C., October 21, 1935.—Sealed bids (Specifications No. 645) will be received at the office of the U. S. Bureau of Reclamation, Federal Building, Yuma, Arizona, until 10 o'clock a.m., Mountain Standard Time, November 25, 1935, and will at the hour be opened for furnishing labor and materials and performing all work for the *construction of Wash Siphon Structures* at 120 Wash, 424 Wash, Unnamed Wash, and Picacho Wash, All-American Canal System, Boulder Canyon Project, Arizona-California-Nevada. The work is located between 5 and 12 miles northeast of Yuma, Arizona. The principal items of work and estimated quantities involved are as follows: 370,000 cubic yards of all classes of excavation; 4,700 cubic yards of compacted embankment; 6,850 cubic yards of back fill; 32,380 cubic yards of concrete; 2,200 square yards of dry-dock paving; 14,000 cubic yards of riprap; placing 6,482,000 pounds of reinforcement bars; installing 116,400 pounds of metal and rubber in side-wall expansion joints; manufacturing and driving 270 23-foot reinforced concrete piles; driving 341,100 pounds of steel sheet-piling; constructing 820 linear feet of timber railing; installing 53,400 pounds of metal handrails; and installing 16,800 pounds of miscellaneous metalwork. This invitation for bids does not cover the purchase of materials which are to be furnished by the Government. Materials to be furnished by the contractor and those furnished by the Government are described in the specifications which will be made part of the contract. The work shall be commenced within thirty (30) calendar days after date of receipt of notice to proceed and shall be completed within six hundred (600) calendar days from the date of receipt of such notice. Bid security in an amount not less than 10 per cent and performance bond not less than 50 per cent will be required. Liquidated damages for delay will be two hundred ($200) per day for each uncompleted schedule. No charge to prospective bidders for copies of the specifications and drawings; to others $2.50 per copy, not returnable. For particulars, address the Bureau of Reclamation, Yuma, Arizona; Denver, Colorado; or Washington, D. C. ELWOOD MEAD, Commissioner. (1815)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Washington, D. C., October 22, 1935.—Sealed bids (Specifications No. 647) will be received at the office of the Bureau of Reclamation, Federal Building, Yuma, Arizona, until 10 o'clock a.m., Mountain Standard Time, November 23, 1935, and will at that hour be opened for furnishing labor and materials and performing all work for the *construction of earthwork, All-American Canal,* Boulder Canyon project, Arizona-California-Nevada. The work is located on the Colorado River from 10 to 14 miles northeast of Yuma, Arizona. The principal items of work and the estimated quantities involved are as follows: 1,072,000 cubic yards of common excavation for canal; 542,000 cubic yards of rock excavation for canal; 97,000 cubic yards of stripping for embankments; 25,200 cubic yards of excavation of cut-off and toe trenches; 691,000 cubic yards of compacted embankment; 8,000,000 station cubic yards of hauling and placing rock fill on outside slope of canal embankment; 17,400 cubic yards of gravel blankets on inside slopes of canal embankments; and fabricating and driving 1,440 M. ft. b.m. of timber sheet-piling. This invitation for bids does not cover the purchase of materials which are to be furnished by the Government. Materials to be furnished by the contractor, and those furnished by the Government are described in the specifications which will be a part of the contract. The work shall be commenced within 30 calendar days after date of receipt of notice to proceed. Schedule 1 must be completed within 780 days and schedule 2 within 600 calendar days from date of receipt of such notice. Bid security in an amount not less than 10 per cent and performance bond not less than 50 per cent will be required. Liquidated damages for delay will be two hundred dollars ($200) per day for each uncompleted schedule. No charge to prospective bidders for copies of the specifications and drawings; to others, $1.00 per copy, not returnable. For particulars, address the Bureau of Reclamation, Yuma, Arizona; Denver, Colorado; or Washington, D. C. ELWOOD MEAD, Commissioner. (1816)

OFFICIAL PROPOSALS

Bids: November 7.

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, Albany, N. Y., until one o'clock p.m. on Thursday, November 7, 1935, for the construction and reconstruction of highways and bridges in the following counties, in accordance with the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11—74th Congress).

CONSTRUCTION

County	Deposit Required
CHENANGO (Timber Trestle, Two 13' spans; Closed Box 15'x19'; Timber Trestle, Two 13' spans; Closed Box 15'x4')	$650.00
CORTLAND (12'x5' Box, 20' slab, 20'6" slab; 5 span 73' Timber Trestle and 5 span 77' Timber Trestle)	1,500.00
NASSAU (Preli. Grad. and Double span Plate Girders; 67'-8" and 30' spans: 0.19 mile)	8,500.00
QUEENS (Prelim. Grading and Structures and Misc. Work: 0.21 mile)	7,000.00
(Prelim. Grad. and Structures; 1.71 miles)	14,000.00
(Var. Concrete 8" or 9" Var. B.M.P.: 1.46 miles)	26,000.00
(Prelim. Grad. and Structures B.M.P. and Misc. Work: 1.05 miles)	24,000.00
RECONSTRUCTION	
BROOME (Concrete: 1.63 miles)	9,000.00
ONONDAGA (Concrete Widening 40' MM. 3: 2.28 miles)	7,500.00
RENSSELAER (Construction and Reconstruction) (20'—33½' and Var. Conc. 8": 1.26 miles)	6,000.00

Maps, plans, specifications, and estimates may be seen and proposal forms obtained at the office of the Division of Highways in Albany, N. Y., and at the office of the District Engineers in whose district the roads are located, upon the payment of Five Dollars ($5.00) for plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Bldg., Worth & Center Streets, New York City. No refund will be made on plans, specifications or proposal forms. The addresses of the District Engineer and Counties in each district will be furnished upon request.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions covering subletting or assigning the contract and to the use of domestic materials, when let under the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11—74th Congress) for the purpose of providing employment and hastening industrial recovery.

Proposal for each highway or contract must be submitted in a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the New York State Department of Public Works, Division of Highways, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Subdivision 2 of Section 130 of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Sec. 130 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten percentum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance to the Highway Law, the amount of the bidding check will be returned when fifteen percentum of the contract work has been completed.

OFFICIAL PROPOSALS

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows:

In New York City: Skilled Labor, eighty cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Nassau, Rockland, Suffolk and Westchester: Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Dutchess, Orange, Putnam, Ulster and Sullivan, seventy-five cents per hour for Skilled Labor; Intermediate Grade Labor, Fifty-five cents per hour; Unskilled Labor, fifty cents per hour; and in all other counties other than above, Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, Forty-five cents per hour.

The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Subdivision d, of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

FRED'K STUART GREENE,
Supt. State Dept. Public Works.

Bids: November 12.

Garage

CONTRACT NO. 3
RIP VAN WINKLE BRIDGE

Sealed proposals for Contract No. 3 will be received by the undersigned at the State Office Building, Twelfth Floor, Albany, New York, until 1 p.m., Standard Time, November 12, 1935, when they will be publicly opened and read. Proposal must be submitted in a sealed envelope with the name of the contract plainly endorsed thereon. Each proposal must be accompanied by cash, draft or certified check, payable to the New York State Bridge Authority, for six hundred dollars ($600.00). The Contractor to whom the award is made may be required to furnish for the faithful performance of the work a surety bond for not less than 100 per cent of the amount of the contract. Specifications and plans for this contract may be examined at the office of the Chief Engineer, New York State Bridge Authority, Twelfth Floor, State Office Building, Albany, New York, and at the office of the Department of Public Works, 80 Centre Street, New York, New York. Plans and specifications will be furnished by the Chief Engineer, New York State Bridge Authority, State Office Building, Albany, New York, upon payment of $5.00. A refund of $2.50 will be made for each copy of the specifications returned in good condition. The estimated cost of Contract No. 3 is $11,000.00.

The minimum hourly rate of wages for unskilled labor on this project has been designated by the State Industrial Commissioner, pursuant to Chapter 733 of the Laws of 1933, as fifty cents per hour. The schedule of wages to be paid for other workmen and mechanics employed on this project, pursuant to Chapter 731 of the Laws of 1933, has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal.

The right is reserved to reject any and all bids.

FREDERICK STUART GREENE,
Superintendent, New York State Department of Public Works and Chief Engineer,
New York State Bridge Authority.

OFFICIAL PROPOSALS

Bids: November 5.

Highway Construction

Memphis, Tenn.

Sealed proposals for the improving of Chelsea Avenue and the construction of reinforced concrete bridge over Cypress Creek for the City of Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1012
Sub-Project No. A and B

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk, 204 Court House, until 2:30 p.m., on the 5th day of November, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119, Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Bidder and a Surety company, satisfactory to the Public Works Administration, in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A.

Proposal forms must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director of the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on projects financed in part or in whole with P.W.A. funds the bidder must execute the certificate that he fully understands the penalty clause as set out in Penalty for False Certification included in the specifications.

All work executed and all materials furnished shall conform to the Rules and Regulations of the Federal Emergency Administration of Public Works.

This project is being financed from funds to be furnished by the United States Government, and failure of the City of Memphis to receive the requisite funds from the Government, relieves said City and its officials and representatives from any responsibility, damage or loss due to the taking of bids.

The amount of funds available for the construction of paving on this project is $82,732.00.

The amount of funds available for the construction of the concrete bridge on this project is $69,300.00.

The approximate quantities—bridge proposal—are as follows:

1	Reinforced Concrete Bridge, Complete as per Plan
10	Cu.Yds. Extra Class "A" Bridge Concrete
10	Cu.Yds. Extra Class "B" Bridge Concrete
1,000	Lbs. Extra Reinforcing Steel in Place
100	Lin.Ft. Extra Wood Piling in Place

The approximate quantities—pavement proposal—are as follows:

20,000	Cu.Yds. Excavation
20,000	Sq.Yds. Sodding
30	Trees Removed
150	Sq.Ft. Concrete Water Table Removed
500	Sq.Ft. Concrete Water Table and Spillway Gutter Constructed
400	Sq.Ft. Concrete Driveway Removed
200	Sq.Ft. Concrete Driveway Constructed
5,500	Sq.Ft. Concrete Sidewalk Removed
5,509	Sq.Ft. Concrete Sidewalk Constructed
100	Lin.Ft. Concrete Steps Removed
250	Lin.Ft. Concrete Steps Constructed
2,900	Lin.Ft. Metal Plate Guard Rail
30	Lin.Ft. 6"x18" Concrete Curb Constructed
50	Lin.Ft. 4"x20" Granite Curb Removed and Reset
50	Lin.Ft. 4"x20" Granite Curb Removed and Hauled
100	Sq.Yds. Asphalt and Concrete Pavement Removed
25,100	Sq.Yds. Concrete Paving 8-6-8 Highway Type Constructed
300	Sq.Yds. Sheet Asphalt Paving, Including Foundation, at R.R. Crossing
900	Lin.Ft. Cyclone Fence Removed and Reset
500	Sq.Yds. Gravel Driveways Replaced
500	Lin.Ft. 15" Corrugated Metal Pipe Furnished and Laid 0-6' Deep
350	Lin.Ft. 18" Corrugated Metal Pipe Furnished and Laid 0-6' Deep
60	Lin.Ft. 24" Corrugated Metal Pipe Furnished and Laid 0-6' Deep
80	Lin.Ft. 24" Conc. or Vit. Pipe, Furnished and Laid 0-6' Deep
80	Lin.Ft. 30" Conc. or Vit. Pipe Furnished and Laid 0-6' Deep
90	lin.Ft. 33" Conc. or Vit. Pipe Furnished and Laid 0-6' Deep
7	Masonry Junctions Constructed
12	Sq.Yds. 1:3:6 Concrete in Headwalls
2	No. 11 Inlets Constructed
80	Cu.Yds. Hand Excavation in Ditches
1	Special 3'x3' Inlet Constructed
1,000	Lin.Ft. 6" Sewer (House Connections) Furnished and Laid 6'-12' Deep
2	Standard Sewer Manholes (4' Diameter) Constructed
6	Vertical Ft. Additional Depth M.H. (4' Diameter) Constructed
10	Vertical Ft. Additional Depth M.H. (5' Diameter) Constructed

Separate bids are asked for the construction of the bridge and for the construction of the paving.

The City of Memphis, Tennessee, reserves the right to reject any and all bids, waive any informalities therein, to award the contract for the bridge and the contract for the paving separately or award a contract for both of them together as may appear to the best interest of the City.

WATKINS OVERTON, Mayor

ATTEST:
D. C. MILLER, City Clerk.

Bids: November 19.

Excavation, Grading, Roads and Drainage

FOR HIGH SCHOOL,
WATERVLIET, N. Y.

Board of Education, Incorporated,
City of Watervliet, N. Y.

Sealed bids fór Excavation, Grading, and Roads for High School and Athletic Field will be received by the Board of Education, Inc., City of Watervliet, N. Y., at the office of the Board of Education, 4th Ave. and 14th St., Watervliet, N. Y., until 7:30 p.m., Standard Time, on the Nineteenth day of November, 1935, and then at said office, publicly opened and read.

The information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and forms of Performance and other surety bonds may be examined at said office and at the office of Charles F. Egan, Architect, 251 River St., Troy, N. Y., and Solomon & Keis, Consulting Engineers, 257 Broadway, Troy, N. Y., and copies thereof obtained upon payment of Twenty-five ($25.00) Dollars for each set. Any bidder, upon returning such set prmptly and in good condition, will be refunded his payment.

The Board of Education, Incorporated, City of Watervlyiet, N. Y., reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in an amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information for Bidders.

This contract must be performed in accordance with the requirements of the Federal Emergency Administration of Public Works and the Works Progress Administration.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof.

Signed: FRANK L. YORK,
Secretary.

Dated: October 28, 1935.

U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 27, 1935, for furnishing all labor and materials and performing all work for *construction complete of the U. S. Insp. Sta. Bldg. at North Troy, Vt.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications Must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, Chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn i the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (1817)

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 19, 1935, for furnishing all labor and materials and performing all work for *construction of the U. S. P. O., Wilkinsburg, Pos. Sta. at Pittsburgh, Pa.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works, as modified by the specification. Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to the office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (187)

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., December 5, 1935, for the *construction of Project 2D1*, 13.21 miles of road in the Shenandoah-Great Smoky Mountains Parkway, from Route 18 to Horse Gap, Alleghany, Ashe, and Wilkes Counties, North Carolina. It is anticipated this will involve major items of approximately 60 acres clearing and grubbing; 600,000 cu.yds. excavation; 380,000 sta. yds. overhaul; 46,000 tons crushed stone surfacing; 900 cu. yds. cement concrete; 80,000 lbs. reinforcing steel; 500 cu. yds. cement stone masonry; 8000 lin.ft. cast iron culvert pipe or reinforced concrete pipe; 2,000 cu.yds. hand laid rock embankment; 1,500 lin.ft. tile underdrain; 30 drop inlets; 26,000 cu.yds. stripping and storing topsoil; and 26,000 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00 cash or certified check, will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N.W., Washington, D. C., or the Bureau Office, Roanoke, Virginia. H. J. Spelman, District Engineer. (1719)

U. S. Government

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., November 25, 1935, for the *construction of Project 1P1, 8.27 miles of road in the Shenandoah Great Smoky Mountains Parkway, from Adney Gap to Pine Spur Gap, Floyd and Franklin Counties, Virginia*, involving major items of 20 acres clearing and grubbing; 312,000 cu.yd. excavation; 80,000 sta.yd. overhaul; 28,500 tons crushed stone surfacing; 170 cu.yd. cement concrete; 17,000 lbs. reinforcing steel; 2,310 cu.yd. cement stone masonry; 5,500 lin.ft. cast iron culvert pipe or reinforced concrete pipe; 2,000 lin.ft. 6-10 inch vitrified tile underdrain; 27 drop inlets; ;25,000 cu.yd. stripping and storing topsoil; and 25,000 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00 cash or certified check will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N. W., Washington, D. C., or the Bureau Office, Roanoke, Virginia. H. J. Spelman, District Engineer. (1716)

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., November 27, 1935, for the *construction of Project 1Q1*, 11.02 miles of road in the Shenandoah Great Smoky Mountains Parkway, from Pine Spur Gap to Smart, Floyd and Franklin Counties, Virginia, involving major items of 25 acres clearing and grubbing; 248,000 cu.yd. excavation; 187,000 sta.yd. overhaul; 39,000 tons crushed stone surfacing; 600 cu.yd. cement concrete; 47,000 lb. reinforcing steel; 700 cu.yd. cement stone masonry; 4,650 lin.ft. cast iron culvert pipe or reinforced concrete pipe; 3,000 lin.ft. 6-10 inch vitrified tile underdrain; 63 drop inlets; 33,000 cu.yd. stripping and storing topsoil; and 33.000 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00 cash or certified check will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N. W., Washington, D. C., or the Bureau Office, Roanoke, Virginia, H. J. SPELMAN, District Engineer. (1720)

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., November 21, 1935, for the *construction of Project 1A1*, 8.49 miles of road in the Shenandoah Great Smoky Mountains Parkway, from Jarmans Gap to Rock Fish Gap, Albemarle County, Virginia, involving major items of 58 acres clearing and grubbing; 357,000 cu.yd. excavation; 150,000 sta.yd. overhaul; 30,000 tons crushed stone surfacing; 450 cu.yd. cement concrete; 45,750 lb. reinforcing steel; 1,450 cu.yd. cement stone masonry; 6,000 lin.ft. corrugated metal pipe; 1,500 lin.ft. 6-10 inch vitrified tile underdrain; 88 drop inlets; 12,000 cu.yd. stripping and storing topsoil; and 12,000 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00 cash or certified check will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N.W., Washington, D. C., or the Bureau Office, Roanoke, Virginia. H. J. Spelman, District Engineer. (1717)

WAR DEPARTMENT. Office of the Constructing Quartermaster, Fort McClellan, Alabama. Sealed proposals will be received at this office until 2:00 P.M., C.S.T., November 14, 1935, and then publicly opened for the *construction of Chapel at this station*. Plans and specifications will be furnished upon deposit of certified check in amount of $25.00 made payable to the Treasurer of the United States. Information at the above address. (172)

OFFICIAL PROPOSALS

Bids: November 12.

State Highway Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25, SECTIONS 16A, 17B & 20A

Construction of Route 25, Sections 16A, 17B & 20A from Neck Lane to Bayway Circle, City of Elizabeth, Union County, length 1.775 miles.

Estimated:

2,075	cu.yds. roadway excavation unclassified.
8,499	sq.yds. breaking existing conc. foundation.
13,768	sq.yds. Removal of Bituminous conc. pavement.
6,265	sq.yds. Concrete Pavement Foundation.
1,910	tons Bit. Conc. Pave. Type S.P.-2.

Bids for the above will be received at the office of the State Highway Department, State House Annex, Trenton, N. J., on Tuesday, November 12, 1935, at twelve o'clock Noon, Eastern Standard Time, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification laws and the regulations adopted by the State Highway Commissioner. Bidders must submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed work is a "United States Works Program Highway Project" under the provisions of the Emergency Relief Appropriation Act of 1935, and is to be performed in accordance with the Special Provisions and Requirements of the United States Department of Agriculture, Bureau of Public Roads, as outlined in the Supplementary Specifications to be made a part of the contract and specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, City Hall, Elizabeth, N. J., preference in employment to be given, when they are qualified, to those obtained from the public relief rolls. The attention of bidders is directed to the Special Provisions covering subletting or assigning the contract and to the use of Domestic Materials. The minimum wage paid to all skilled labor employed on this contract shall be $1.20 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 65c per hour. The minimum wage paid to all unskilled labor employed on this contract shall be 50c per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made on the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in a sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten per cent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal form and special addressed envelopes will be furnished on application. Bids not enclosed in special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: E. DONALD STERNER,
State Highway Commissioner.

Bids: December 5.

New Orleans, Sept. 17, 1935.

Sealed proposals will be received by the Sewerage & Water Board, 526 Carondelet St., New Orleans, up to 12 M., Thursday, Dec. 5, 1935, for Furnishing Labor and Material on a percentage basis during 1936. Specifications on request.

ALF. F. THEARD,
General Superintendent.

A. G. MOFFAT, Secretary.

OFFICIAL PROPOSALS

Bids: November 18.

Sewage Treatment Plant

FURNISHING MATERIAL AND MAKING REPAIRS. REPLACEMENTS AND IMPROVEMENTS
VILLAGE OF BALLSTON SPA, N. Y.

Sealed proposals will be received by the Board of Trustees of the Village of Ballston Spa, N. Y., at the Village Office, Ballston Spa, N. Y., until 7:30 o'clock p.m. on the eighteenth day of November 1935, for the Repairs, Replacements and Improvements to the Sewage Treatment Plant of Ballston Spa, N. Y., at which time and place they will be publicly opened and read.

The work will consist of a new sludge drying bed, installation of sludge removal equipment in Collecting and Settling Tanks, repairs, alterations and improvements to concrete structures, new sprinkling filter, secondary settling tank with sludge removal squipment, lagoons and other improvements.

Information to bidders, form of proposal, general conditions, plans and form of contract including specifications and performance bond, may be examined at the office of Solomon & Keis, Consulting Engineers, 257 Broadway, Troy, N. Y., and copies may be obtained upon the deposit of $25.00. The amount of the deposit will be refunded to each bidder who returns the plans and documents in good condition within thirty (30) days after the opening of the bids.

The Board of Trustees of the Village of Ballston Spa, N. Y. hereby reserves the right to reject any or all bids, or to accept the one that in its judgment will be for the best interests of the Village of Ballston Spa, N. Y., all subject to the approval of the State Director, Federal Emergency Administration of Public Works.

A bid bond, or a certified check made payable to the order of the Village of Ballston Spa, N. Y., in the amount of five per centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him he will within ten days after he has received notice of such award, execute such contract and furnish a satisfactory performance bond. On failure to do so he shall forfeit the deposit as liquidated damages, and acceptance of the bid will be contingent upon the fulfillment of this requirement by the Bidder. The checks or bid bonds of all excepting the three lowest formal bidders will be returned within three days after the opening of bids, while the remaining checks or bid bonds will be returned when the State Director has approved the executed contract, or if no such approval has been given within 45 days after the date of opening of bids, then on demand of the bidder at any time thereafter.

The successful bidder will be required to furnish a performance bond satisfactory to the Board of Trustees of the Village of Ballston Spa, N. Y., and approved by the State Director in the full amount of the accepted bid.

This contract is to be financed wholly by a loan and grant by the Federal Emergency Administration of Public Works, and is subject to the provisions of the Emergency Relief Appropriation Act of 1935, and to the Executive Orders of the President issued pursuant thereto, and to the rules and regulations prescribed by the President of the United States, the Federal Emergency Administration of Public Works, and the Works Progress Administration.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

The Board of Trustees reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Dated: October 25, 1935.

RALPH E. DUNTON,
Village Clerk.

SOLOMON & KEIS,
Consulting Engineers,
257 Broadway,
Troy, N. Y.

OFFICIAL PROPOSALS

Bids: November 12.

House Moving

Memphis, Tenn.

Sealed proposals for moving and doing certain remodeling work at thirty-four (34) locations on Hollywood Street between Jackson Avenue and Chelsea Avenue for the City of Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1018
Sub-Project No. 1018-A

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk, 204 Court House, until 2:30 p.m., on the twelfth day of November, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119, Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bon executed by the Bidder and a Surety Company licensed to operatae in Tennessee, satisfactory to the Public Works Administration, in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of its properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A., and a Performance Bond in the amount of 100% of contract price.

Proposal forms must be properly filled out and must not be detached from specifications.

All bidders must be licensed Contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on projects financed in part or in whole with P.W.A. funds, the bidder MUST execute the certificate that he fully understands the penalty clause as set out in Penalty for False Certification included in the specifications.

All work executed and all materials furnished shall conform to the Rules and Regulations of the Federal Emergency Administration of Public Works.

This project is being financed from funds to be furnished by the United States Government, and failure of the City of Memphis to receive the requisite funds from the Government, relieves said City and its officials and representatives from any responsibility, damage or loss due to the taking of bids.

All work done must be completed in a manner satisfactory to the City Engineer.

Separate bids will be received on the above houses and filling stations, but the City reserves the right to reject any and/or all bids, waive any informalities therein or to award contracts for each building separately, or as a whole, or any combination that appears to the best interest of the City.

Bidders bidding on all buildings are asked to set out an amount to be deducted from the total amount of their separate bids in he event they are awarded all contracts.

WATKINS OVERTON, Mayor.

ATTEST:
D. C. MILLER, City Clerk.

Bids: November 22.

Structures

New York City.

STATE OF NEW YORK—TRANSIT COMMISSION (Metropolitan Division—Department of Public Service)—270 MADISON AVENUE, NEW YORK CITY—FOR CONSTRUCTION OF WEST 79th STREET ELIMINATION AND RELATED STRUCTURES—Pursuant to the provisions of Chapter 481, Laws of 1910; Chapter 677, Laws of 1928; Chapter 936, Laws of 1935 and amendments thereto, and under the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11—74th Congress), sealed proposals will be received by the Transit Commission at the office of the Commission, 10th Floor, 270 Madison Avenue, New York, New York, until Two o'clock p.m. on November 22, 1935, for the construction of the 79th Street grade crossing elimination over the tracks of The New York Central Railroad Company, together with related structures. Maps, plans, specifications and proposal forms may be obtained at the office of the Transit Commission, 270 Madison Avenue, New York, New York, upon the payment of Fifty Dollars ($50.00) for the plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. No refund will be made on plans, proposal forms or specifications. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Building, Albany, New York.

Amount of deposit required is Eighty Thousand Dollars ($80,000).

Special attention of bidders is called to general information for bidders in the proposal, specifications and contract agreement. Attention of bidders is also directed to "The special provisions for grade crossing projects financed in whole or in part with allocations of funds apportioned to the States under the provisions of the Emergency Relief Appropriation Act of 1935 for the elimination of hazards to life at railroad grade crossings in accordance with provisions of the Federal Highway Act."

The proposal must be submitted in a separate sealed envelope with the name of the project plainly indicated on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the Transit Commission, State of New York, for the sum of Eighty Thousand Dollars ($80,000). Such deposit must not be enclosed in the envelope containing the proposal. The retention and disposal of such cash, draft or check by the Transit Commission shall conform with the procedure specified in Subdivision 2 of Section 130 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when 10% of the work under the contract has been completed.

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

The work to be done under this contract shall be completed on or before December 1, 1936.

Skilled, intermediate Grade and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows:

Skilled Labor, eighty cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, fifty-five cents per hour.

The minimum hourly rates of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be as set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Articles 8 and 8A of the State Labor Law, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

TRANSIT COMMISSION
STATE OF NEW YORK
WILLIAM G. FULLEN, Chairman.
LEON G. GODLEY, Commissioner.
REUBEN L. HASKELL, Commissioner.
MACK NOMBURG, Secretary.

Bids: November 5.

Highway Construction

Memphis, Tenn.

Sealed proposals for the construction of Hollywood Avenue Improvements for the City of Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1018

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk (204 Court House), until 2:30 p.m. on the 5th day of November, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119, Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Midder and a Surety Company satisfactory to the Public Works Administration in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A.

Proposal form must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931 of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on projects financed in part or in whole with P.W.A. funds, the bidder MUST execute the certificate that the fully understands the penalty clause as set out in Penalty for False Certification included in the specifications.

All work executed and all materials furnished shall conform to the Rules and Regulations of the Federal Emergency Administration of Public Works.

This project is being financed from funds to be furnished by the United States Government and failure of the City of Memphis to receive the requisite funds from the Government, relieves said City and its officials and representatives from any responsibility, damage or loss due to the taking of bids.

The funds available for construction purposes of this project are $170,198.00.

Approximate quantities are as follows:

20,000	Cu.Yds. Excavation
20,000	Sq.Yds. Sodding
108	Trees Removed
500	Sq.Ft. Concrete Water Table Constructed
500	Sq.Ft. Concrete Water Table Removed
2,640	Sq.Ft. Concrete Driveway Constructed
1,150	Sq.Ft. Concrete Drieway Removed
10,000	Sq.Ft. Concrete Sidewalk Constructed
8,000	Sq.Ft. Concrete Sidewalk Removed
2,350	Lin.Ft. Concrete Steps
10	Cu.Yds. Concrete Retaining Walls
28,500	Sq.Yds. Concrete Paving 8-6-8 Highway Type
250	Sq.Yds. Sheet Asphalt Paving including Foundation
350	Lin.Ft. Cyclone Fence Removed and Reset
2,000	Sq.Yds. Gravel Driveway Replaced
450	Lin.Ft. 15" and 18" Metal Pipe Furnished and Laid
1,822	Lin.Ft. 15", 18", 21", 24", 27" and 30" Pipe furnished and laid
970	Lin.Ft. 2½'x3', 3'x3' and 3'x4' Concrete culvert const.
14	Special Inlets constructed
2	Drain Manholes constructed
3	Masonry Junctions constructed
5	Cu.Yds. concrete in Headwalls
60	Lin.Ft. 18" C.I. Pipe furnished and laid under R.R.
1,290	Cu.Yds. culvert excavation
500	Cu.Yds. Hand excavation in ditches
2,750	Lin.Ft. 6" Sewer Pipe furnished and laid 6'-14' Deep
2	Standard Sewer Manholes
600	Sq.Yds. Concrete pavement on creek bank slopes
1	Twin 45 foot span reinforced concrete bridge

The right is reserved to reject any and/or all bids and to waive any informalities therein.

WATKINS OVERTON, Mayor.

ATTEST:
D. C. MILLER, City Clerk.

SERVICE SECTION

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U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 26, 1935, for furnishing all labor and materials and performing all work for *construction of the exhibition building for small mammals and great apes at the National Zoological Park, Washington, D. C.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works as modified by the specification. Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (185)

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 16, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 P.M., Nov. 14, 1935, for furnishing all labor and materials and performing all work for *construction of Qrtrs. for Med. Off. and Attds. and Animal House (except elevator) for the U.S.P.H.S. Lab. at Hamilton, Mont.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works. Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered at payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch. (175)

OFFICIAL PROPOSALS

Bids: November 18.

State Highway Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

Notice is hereby given that sealed bids will be received by the State Highway Commissioner for:

ROUTE 34, SECTION 4

Construction of Route 34, Section 4, from New Bedford Road to Route 33, Monmouth County, length 4.205 miles.

ESTIMATED:

111,892	cu.yds. roadway excavation unclassified.
13,719	cu.yds. wet excavation.
51,336	sq.yds. 9" rein. conc. pavement surface.

Bids for the above will be received at the office of the State Highway Department, State House Annex, Trenton, N. J., on Monday, November 18, 1935, at twelve o'clock Noon, Eastern Standard Time, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must submit a revised financial statement and statement of plan and equipment with their bid.

NOTE:—The proposed work is a "Regular Federal Aid Project" under the provisions of Section 4 of the Federal Act of June 18, 1934 (H.R. 8781), known as the Hayden-Cartwright Act, and is to be performed in accordance with the Special Provisions and Requirements of the United States Department of Agriculture, Bureau of Public Roads, as outlined in the Supplementary Specifications to be made a part of the contract and specifications, which provisions require that labor be employed from lists furnished by the National Reemployment Service, 1st Avenue and Board Walk, Asbury Park, N. J. The attention of bidders is directed to the Special Provisions covering subletting or assigning the contract and to the use of Domestic Materials. The minimum wage paid to all skilled labor employed on this contract shall be $1.20 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 65c. per hour. The minimum wage paid to all unskilled labor employed on this contract shall be 50c. per hour.

Drawing, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made on the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten per cent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal form and special addressed envelopes will be furnished on application. Bids not enclosed in special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: E. DONALD STERNER,
State Highway Commissioner.

Bids: November 15.

Sewer System, Etc.

Cornwall, N. Y.

Sealed proposals for furnishing all labor and material for the construction of sewer system and sewage disposal plant and storm sewers will be received by the Board of Trustees of the Village of Cornwall, N. Y., at the Village Hall until 2 p.m. standard time the 15th day of November, 1935, at which time and place all proposals will be publicly opened and read.

Information for bidders, form of bid, form of contract including general conditions, the specifications, the plans, the forms of performance and other surety bonds may

OFFICIAL PROPOSALS

be examined at the office of the Board of Trustees of the Village of Cornwall, and copies thereof may be obtained upon deposit of $15.00 for each set, to be refunded to the bidders upon return of the plans and documents in good condition within thirty (30) days of the opening of the bids.

The work will consist of the following approximate quantities:

1. 47,400 lin.ft. of sewer together with all excavation and backfill for same. The construction of manholes and all other appurtenances.
2. 6,500 cu.yds. rock excavation.
3. Sewage Disposal Plant consisting of five (5) items, viz.:
   - Settling Tank.
   - Pump Well.
   - Pipe Gallery.
   - Digestion Tanks.
   - Sludge Beds.
4. Pumping Equipment.
5. 3,000 lin.ft. 12" Univ. C. I. Pipe outlet in River.
6. 7,150 lin.ft. 12" to 24" storm sewer, 5,600 lin.ft. laid in sanitary sewer trench, together with all manholes and catch basins and other appurtenances.

The Village of Cornwall reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in an amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information for Bidders.

The successful bidder will be required to furnish a performance bond in such form and having as surety thereon such surety company or companies as are approved by the public body and said State Director, in the amount of not less than 100% of the total amount of the accepted bid.

This contract is to be financed wholly or in part by a loan and/or grant by the Federal Emergency Administration of Public Works, and is subject to the provisions of the Emergency Relief Appropriation Act of 1935, and to the Executive Orders of the President issued pursuant thereto, and to the rules and regulations prescribed by the President of the United States, the Federal Emergency Administration of Public Works, and the Works Progress Administration.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract. No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

For further particulars address the Village Clerk or the Engineer.

BOARD OF TRUSTEES,
VILLAGE OF CORNWALL, N. Y.
By: CHARLES A. SLATER,
Mayor,

MORRELL VROOMAN,
Civil Engineer.
Gloversville, N. Y.
Dated: October 25, 1935.

Bids: November 9.

Water Supply Distribution System

OCEAN GATE, N. J.

Sealed proposals will be received by the Mayor and Boro Council of the Borough of Ocean Gate, N. J. at 8:30 p.m., in the Borough Hall on November 9, 1935, for the installation of a water supply distribution system, financed by PWA.

Approximate Quantities

4,955	lin.ft. 10" C.I. pipe.
7,670	lin.ft. 8" C.I. pipe.
17,565	lin.ft. 6" C.I. pipe.
30,542	lin.ft. 4" C.I. pipe.
70	Fire hydrants.
27,739	lbs. specials.
9	10" gate valves.
30	8" gate valves.
61	6" gate valves.
85	4" gate valves.
7	2" blow off pipes and valves.
13,125	lin.ft. of ¾" copper service pipe.

Detailed form of advertisment and proposal may be obtained from Harry C. Shinn, Borough Engineer, at 640 Ocean Ave., Lakewood, N. J., and copies of the plans and specifications may be secured upon payment of $10.00 deposit.

Signed: HARRY C. SHINN,
Borough Engineer.

OFFICIAL PROPOSALS

Bids: November 25.

Sewage Treatment Plant Collecting Sewers and Pumping Station

Highland Park, N. J.

Sealed bids or proposals for the construction of a Sewage Treatment Plant, Collecting Sewers and Pumping Station, will be received by the Borough Council of the Borough of Highland Park, N. J., at the Borough Offices, Raritan Avenue and Fourth Avenue, Highland Park, N. J., on November 25th, 1935 at 8 o'clock P.M. at which time they will be publicly opened and read.

The work is divided into the following Contracts:

Contract A. Sewage Treatment Plant, General Construction.
Contract B. Structural Steel.
Contract C. Heating.
Contract D. Electric Wiring and Lighting.
Contract E. Collecting Sewers, Outfall Sewer, Inverted Siphons, Entrance Chamber, Pumping Station and Force Main.

All bids must be made upon the blank form of proposal in the manner designated therein and required by the specifications, and must be enclosed in a sealed envelope furnished for the purpose, bearing the name and address of the bidder on the outside and must be accompanied by a certified check for an amount not less than 10% of the amount of the bid, made payable to the "Collector of the Borough of Highland Park" and must be delivered at the place and on the hour above named.

The project is financed in whole or in part by the Federal Emergency Administration of Public Works and is subject to all of its requirements.

All contracts and sub-contracts are subject to the approval of the Government Engineer.

Attention of prospective bidders is further directed to Paragraphs 2-C, 3 and 4 of Construction Regulations included in the specifications. The office of the National Re-employment Service which may be called upon for lists of qualified workers is at State Employment Office, 110 Albany Street, New Brunswick, N. J.

Plans and specifications for the proposed work may be obtained at the office of Raymond P. Wilson, Borough Engineer, 46 Paterson Street, New Brunswick, N. J., upon payment of Twenty-five Dollars ($25.00), which amount will be refunded only to contractors submitting bona fide proposals and who return the plans and specifications in good condition within ten days after the receiving of bids.

The Borough Council reserves the right to reject any or all bids, if it is deemed to the best interest of the Borough so to do.

By order of the Borough Council of the Borough of Highland Park, N. J.

IRVING D. BUTTLER,
Mayor.
J. FORD FLAGG,
Clerk.

RAYMOND P. WILSON,
Engineer.

Bids: November 19.

Cleaning Steel Water Pipe

WATER BOARD

P.W.A Project Number Mass. 1073
City of New Bedford, Mass., Nov. 7, 1935

Sealed proposals for the following Item: "Cleaning and Lining 42,600 feet of 48" Riveted Steel Water Pipe in place," in the towns of Rochester, Freetown and Dartmouth, Mass., prepared in accordance with instructions contained in the contract documents, will be received at the office of the New Bedford Water Board at Room 312 Municipal Building, New Bedford, Mass., until 10:00 a.m., Eastern Standard Time, Tuesday, November 19th, 1935, and at that time and place publicly opened and read.

Plans, specifications and other contract documents may be secured at the office of the New Bedford Water Board at the above address free of charge.

Each proposal must be accompanied by a bid bond or certified check for the sum of $5,000.00, made payable to the Treasurer of the City of New Bedford, Mass.

All checks, except that of the bidder to whom the contract is awarded, will be returned within ten days after awarding the contract.

The project is to be financed and constructed under the terms of the Emergency Relief Appropriation Act of 1935 and Chapter 366, Mass. Acts of 1933, as amended, and attention is called to the "Construction Regulations" prescribed by the P.W.A.

Attention is called to the fact that minimum wage rates are established for the project and are set forth in the contract documents.

The office of the United States Employment Bureau designated by the Government for this project is National Reemployment Office, W. W. Daly, Room 243 Post Office Building, New Bedford, Mass.

The right is reserved by the City of New Bedford, Mass., acting through its Water Board, to reject any or all bids; or to accept any bid which it deems most advantageous, subject to the approval of the State Director, P.W.A.

No bidder may withdraw his bid for a period of thirty (30) days after the date set for the opening thereof.

Surety bonds, by a company satisfactory to the State Director, P.W.A. will be required from the successful bidder, as follows:

1st, a Performance Bond in an amount equal to one hundred (100) per cent of the contract price;
2nd, a Maintenance Bond guaranteeing the material and workmanship of the pipe lining for a period of five (5) years after the completion of the contract.

New Bedford Water Board,
STEPHEN H. TAYLOR, Clerk.

Bids: November 7.

Grease & Grit Chamber

South Essex Sewerage District
South Essex Sewerage Board
P.W.A. Project Number Mass. 1245

Sealed proposals for the following Item: (A) Grease and grit chamber in the City of Salem, Mass., prepared in accordance with instructions contained in the contract documents, will be received at the office of South Essex Sewerage Board at Fort Avenue, in Salem, Mass., until 2:00 p.m. Eastern Standard Time, Thursday, November 7, 1935, and at that time and place publicly opened and read.

Plans, specifications and other contract documents may be secured at office of South Essex Sewerage Board at the above address Fort Avenue, Salem, Mass., upon the deposit payment of $10.00 for Proposal A.

Said deposit will be refunded when such documents are returned with the proper receipt for the deposit.

Each proposal must be accompanied by a certified check for the sum of $5,000.00 for Proposal A, made payable to South Essex Sewerage District.

All checks, except that of the bidder to whom the contract is awarded, will be returned within 10 days after the awarding of the contract.

The project is to be financed and constructed under the terms of the Emergency Relief Appropriation Act of 1935 and Chapter 366 Mass. Acts of 1933, as amended, and attention is called to the "Construction Regulations" prescribed by the P.W.A.

Attention is called to the fact that minimum wage rates are established for the project and are set forth in the contract documents.

The office of the United States Employment Bureau designated by the Government for this project is Salem, Mass.

The right is reserved by the South Essex Sewerage District acting through its Board to reject any or all bids, or to accept any bid which it deems most advantageous, subject to the approval of the State Director P.W.A.

No bidder may withdraw his bid for a period of thirty (30) days after the date set for the opening thereof.

A surety bond by a company satisfactory to the State Director, P.W.A., and in an amount equal to one hundred (100%) per cent of the contract price will be required from the successful bidder.

GEORGE F. ASHTON, Clerk.

YOU GET national competition on your request for bids in the Official Proposal Columns of
ENGINEERING NEWS-RECORD

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Washington, D. C., October 23, 1935. Sealed bids (Specifications No. 649) will be received at the office of the U. S. Bureau of Reclamation, Casper, Wyoming, until 10 A. M., Mountain Standard Time, November 25, 1935, and will at that hour be opened for furnishing labor and materials and performing all work for the *construction of Tunnels Nos. 3, 4, 5 and 6,* Casper Canal, Casper-Alcova project, Wyoming. The work is located from 13 to 36 miles southwest of Casper. The principal items and estimated quantities of work involved are as follows: 166,000 cubic yards of all classes of open-cut excavation; 81,500 cubic yards of tunnel excavation; 900 cubic yards of back fill; 1,096 cubic yards of concrete in portal structures and transitions; 17,750 cubic yards of concrete in tunnels; 3,400 cubic feet of pressure grouting; 800 cubic yards of dry-rock paving; furnishing and installing 390,000 pounds of steel tunnel supports; furnishing and installing 132 M. ft. b.m. of timber lagging and sills for steel tunnel supports; furnishing and installing 415,000 pounds of steel tunnel liner plates; constructing 11,000 linear feet of 6- to 10-inch diameter tunnel drains; placing 116,000 pounds of reinforcement bars; drilling 1,600 linear feet of grout holes; and installing 2,300 pounds of metalwork. This invitation for bids does not cover the purchase of materials which are to be furnished by the Government. Materials to be furnished by the contractor and those furnished by the Government are described in the specifications which will be part of the contract. The work shall be commenced within thirty (30) calendar days after date of receipt of notice to proceed and shall be completed within seven hundred and fifty (750) calendar days from the date of receipt of such notice. Bid security in an amount not less than 10 per cent and performance bond not less than 50 per cent will be required. Liquidated damages for delay will be fifty dollars ($50) per day for each uncompleted schedule. No charge to prospective bidders for copies of the specifications and drawings; to others $1.00, not returnable. For particulars, address the Bureau of Reclamation, Caspar, Wyoming; Denver, Colorado; or Washington, D. C. ELWOOD MEAD, Commissioner (1821).

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 25, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 P.M., Nov. 20, 1935, for furnishing all labor and materials and performing all work for vault entrances in the *U. S. Mint at San Francisco, Calif.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin no. 51 (revised) of the Federal Emergency Administration of Public Works as modified by the specification. Upon application, one (1) set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch. (1822)

WAR DEPARTMENT, U. S. Engineer Office, 332 Post Office Building, Baltimore, Md. Sealed bids in duplicate will be received here until 10:00 A.M., E.S.T., November 11, 1935, and then publicly opened for *dredging* (Section A) approximately 256,700 cubic yards of material, place measurement, for a fishing harbor, 10 feet deep, 100 feet wide and 3,000 feet long; and for dredging (Section B) 355,000 cubic yards material for a channel 6 feet deep, 75 to 125 feet wide, 18,000 feet long from inlet to Isle of Wight Bay, Ocean City, Md. (176)

Bids: November 15.

Water Main Extension

CITY OF OSWEGO, NEW YORK,
DEPARTMENT OF WATER

Sealed bids for the general construction of extension to existing water main in the City of Oswego, New York, to and in the Hamlet of Minetto, New York, together with the necessary meters, valves, hydrants, concrete pits, elevated water tang and tower, booster pump station, pumps and all appurtenances required for a complete operating water distribution system, will be received by the Department of Water at the office of the Superintendent until 10 a.m. o'clock in the Oswego City Hall on November 15, 1935, and then at said office publicly opened and read.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and forms of Performance and other surety bonds may be examined at said office and copies thereof obtained upon payment of $5.00 for each set. Any bidder upon returning such set promptly and in good condition, will be refunded his payment.

The City of Oswego, New York, Department of Water reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in an amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information to Bidders.

This contract must be performed in accordance with the requirements of the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract. No bidder may withdraw his bid within 45 days after the actual date of the opening thereof.

Signed: **WILLIAM A. McCAFFREY,**
Superintendent, Department of Water.
Dated: October 22, 1935.

Bids: November 21.

Sewer Construction

Louisville, Ky.

Sealed bids, under conditions of Proposal A and B, will be received by the Commissioners of Sewerage of Louisville until 12 o'clock, noon, November 21, 1935, for constructing OLIVE ST. VORSTER AVE. SEWER, Contract No. 88, embracing the following:

2,837 lin.ft.—5'-2"x7'-9" Reinforced Concrete Inverted Egg Sewer.
1,146 lin.ft.—60" Reinforced Concrete Circular Sewer.
1,427 lin.ft.—54" Reinforced Concrete Circular Sewer.
950 lin.ft.—36" Reinforced Concrete Circular Sewer.
330 lin.ft.—18" Vitrified Clay or Reinf. Conc. Culv. Pipe Sewer.
270 lin.ft.—15" Vitrified Clay or Reinf. Conc. Culv. Pipe Sewer.

Information for Bidders, Proposal, Contract, Specifications and Bonds, bound in one volume for Proposal A and another volume for Proposal B and one set of Drawings for both Proposals may be had upon deposit of Ten Dollars ($10) to be refunded upon their return within thirty (30) days after the opening of bids.

Bids made shall be upon blank forms of "Proposal" and must be inclosed in a sealed envelope addressed to the COMMISSIONERS OF SEWERAGE OF LOUISVILLE, 400 MARION E. TAYLOR BLDG., FOURTH AND JEFFERSON STREETS, LOUISVILLE, KY., and accompanied by a certified check or cashier's check drawn upon a state or national bank or trust company established in the City of Louisville (or the City of New York) or by New York Exchange, said check or exchange to be for an amount not less than ten (10) per cent, of the total amount of the accompanying bid (one check will be accepted as applying to both bids.) Check or exchange not to be inclosed in the envelope containing bids.

PROPOSAL A.—WORK TO BE DONE UNDER P.W.A. CONSTRUCTION REGULATIONS.

Bids will be received and contracts if let under Proposal A shall be subject to all provisions of the Emergency Relief Appropriation Act of 1935. Attention is called to the fact that not less than the minimum rates as prescribed in the Construction Regulations must be paid on this Project.

The award of this contract under this Proposal, if made, is contingent upon the approval of the State Director, P.W.A., and the securing of funds from the Government. No bidder may withdraw his bir for a period of thirty (30) days after the date set for the opening thereof. After the tabulation of bids has been made the lowest acceptable bidder determined and approved, all other certified bid checks will be returned.

The award of this contract is contingent upon the securing of an acceptable bid which will fall within the amount of funds available for the construction of the project.

Commissioners of Sewerage of Louisville reserves the right to make such changes in the design and the extent of the Works as may be necessary to reduce the cost of the project to within the limit of the funds available; provided such reduction does not affect the total estimate more than 20 per cent.

PROPOSAL B.—WORK TO BE DONE UNDER COMMISSIONERS OF SEWERAGE STANDARD CONSTRUCTION REGULATIONS.

Bids will be received and contract, if awarded under Proposal B, will be wholly under the direction of the Commissioners of Sewerage of Louisville.

Minimum labor rate 33⅓ cents per hour. Apprentice 30 cents per hour for first 2 weeks. Maximum working time 48 hours per week.

The right to accept any bid or reject any and all bids is reserved.

COMMISSIONERS OF SEWERAGE
OF LOUISVILLE,
By: J. H. DURHAM,
Chairman,
WOOLSEY M. CAYE, Technical Engineer.

Bids: November 12.

House Moving

Memphis, Tenn.

Sealed proposals for moving and doing certain remodeling work to house No. 624 Highland, 3500 Forest and Filling Station located on the Southeast corner of Highland St. and the NC&ST.LRR for the City of Memphis, Tennessee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1013,
Sub-Project 1013-A

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk, 204 Court House, until 2:30 p.m., on the twelfth day of November, 1935. and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119, Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Bidder and a Surety Company licensed to operate in Tennessee, satisfactory to the Public Works Administration, in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A. and a Performance Bond in the amount of 100% of contract price.

Proposal forms must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of thirty days after the date set for the opening of such bids.

In bidding on projects financed in part or in whole with P.W.A. funds, the bidder MUST execute the certificate that he fully understands the penalty clause as set out in Penalty for False Certification included in the specifications.

All work executed and all materials furnished shall conform to the Rules and Regulations of the Federal Emergency Administration of Public Works.

This project is being financed from funds to be furnished by the United Sttaes Government, and failure of the City of Memphis to receive the requisite funds from the Government, relieves said City and its officials and representatives from any responsibility, damage or loss due to the taking of bids.

All work done must be completed in a manner satisfactory to the City Engineer.

Separate bids will be received on the above houses and filling station, but the City reserves the right to reject any/and or all bids, waive any informalities therein, or to award contracts for each building separately, or as a whole, or any combination that appears to the best interest of the City, subject to approval of State Engineer P.W.A.

Bidders bidding on all three buildings are asked to set out an amount to be deducted from the total amount of their separate bids in the event they are awarded all three contracts.

The Sum Available for Construction of Projects A and B is $181,427.00.

WATKINS OVERTON, Mayor.
ATTEST:
C. D. MILLER, City Clerk.

Bids: November 21.

Intercepting Sewers, Etc.

CITY OF AUBURN, NEW YORK

Sealed proposals for the Construction of Intercepting Sewers and Sewage Treatment Works will be received by the City of Auburn, Cayuga County, New York, until 2 o'clock p.m., Eastern Standard Time, at the City Hall, on November 21, 1935, at which time and place they will be publicly opened and read.

The work is divided into seven (7) separate contracts:

Contract I—River Interceptor.
Contract II—North Interceptor.
Contract III—Sewage Treatment Works (General).
Contract IV—Electrical Work.
Contract V—Heating System.
Contract VI—Plumbing System.
Contract VII—Incinerator and Appurtenances.

Information for Bidders, Form of Bid, Form of Contract, including General Conditions and Specifications, copies of Plans, Performance Bond and other surety bonds may be examined at the office of J. J. Tehan, City Engineer, Auburn, New York, and Thomas F. Bowe, Consulting Engineer, 110 William Street, New York, and copies may be obtained upon making the deposit of twenty-five ($25.00) dollars, for each set. The amount of the deposit will be refunded to each bidder who returns the Plans ond Documents in good condition within thirty (30) days after the opening of bids.

The City of Auburn reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in an amount of not less than five per centum (5%) of the base bid in cash, certified check or a bid bond.

The successful bidder will be required to furnish a performance bond in form and substance and with sureties approved by the City of Auburn and the State Director, in the amount of not less than 100% of the total amount of the accepted bid.

Such performance bond must be executed by a duly authorized surety company as surety.

This contract is to be financed in part by a grant by the Federal Emergency Administration of Public Works, and is subject to the provisions of the Emergency Relief Appropriation Act of 1935, and to the Executive Orders of the President issued pursuant thereto, and to the rules and regulations prescribed by the President of the United States, the Federal Emergency Administration of Public Works, and the Works Progress Administration.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under these contracts.

No bidder may withdraw his bid within 60 days after the date set for the opening thereof.

WILLIAM B. PATTERSON,
City Manager.
Dated: October 24, 1935.

OFFICIAL PROPOSALS

Bids: November 20.

Deep Well Gravel Screen Well and Pumping Equipment

VILLAGE OF ROCKVILLE CENTRE,
NASSAU COUNTY, NEW YORK

Dated, October 25, 1935.

Sealed bids for ONE DEEP GRAVEL SCREEN WELL AND PUMPING EQUIPMENT, to be known as Well No. 5, for extension of Water Works Plant at Rockville Centre, New York, will be received by the Village of Rockville Centre, New York, at the office of the Village Clerk until 8:00 o'clock p.m. in the Municipal Building, November 20, 1935, and then at said office, publicly opened and read.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and forms of Performance and other surety bonds may be examined at said office and copies thereof obtained upon payment of $10.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment.

The Village of Rockville Centre reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

Each bidder must deposit with his bid security in any amount of not less than five per centum (5%) of the base bid in the form and subject to the conditions provided in the Information to Bidders.

This Contract must be performed in accordance with the requirements of the Federal Emergency Administration of Public Works.

This contract is to be financed wholly or in part by a loan and/or grant by the Federal Emergency Administration of Public Works, and is subject to the provisions of Title II of the National Industrial Recovery Act and to the Executive Orders of the President issued pursuant thereto, and to the rules and regulations prescribed by the President of the United States or the Federal Emergency Administrator of Public Works.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

All bids are made and if accepted, are accepted upon the express understanding and conditions that the same are not to become operative unless and until the Water Power and Control Commission of the State of New York grants the pending application of the Village of Rockville Centre to said Water Power and Control Commission for permission to obtain a new source of water supply through the medium of this project.

No bidder may withdraw his bid within 45 days after the actual date of the opening thereof.

H. C. MAJOR,
Commissioner of Public Utilities.
October 25, 1935.
(Date)

Bids: November 14.

Furnishing Material and Constructing Extensions to Water Works System

OF THE LATHAM WATER DISTRICT,
COLONIE, N. Y.

Sealed proposals will be received by the Town Board of Colonie, N. Y. at the Town Hall, Newtonville, N. Y., until 8:00 p.m., Standard Time on the fourteenth day of November, 1935, for furnishing and installing 5,200 feet of 10" and 19,360 of 6" cast iron water mains, equipped with valves and hydrants, and connecting same to the piping in the present distribution system.

Information to bidders, form of proposal general conditions, plans and form of contract including specifications and performance bond, may be examined at the office of Solomon & Keis, Consulting Engineers, 257 Broadway, Troy, N. Y., and copies may be obtained upon the deposit of $25.00. The amount of the deposit will be refunded to each bidder who returns the plans and documents in good condition within thirty (30) days after the opening of the bids.

The Town Board of the Town of Colonie, N. Y., hereby reserves the right to reject any or all bids, or to accept the one that in its judgment will be for the best interests of the Town of Colonie, N. Y., all subject to the approval of the State Director, Federal Emergency Administration of Public Works.

A bid bond, or a certified check made payable to the order of the Town of Colonie, N. Y., in the amount of five per centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him he will within ten days after he has received notice of such award, execute such contract and furnish a satisfactory performance bond. On failure to do so he shall forfeit the deposit as liquidated damages, and acceptance of the bid will be contingent upon the fulfillment of this requirement by the Bidder. The checks or bid bonds of all excepting the three lowest formal bidders will be returned within three days after the opening of bids, while the remaining checks or bid bonds will be returned when the State Director has approved the executed contract, or if no such approval has been given within 45 days after the date of opening bids, then on demand of the bidder at any time thereafter.

The successful bidder will be required to furnish a performance bond satisfactory to the Town Board of the Town of Colonie, N. Y., and approved by the State Director, in the full amount of the accepted bid.

This contract is to be financed wholly by a loan and grant by the Federal Emergency Administration of Public Works, and is subject to the provisions of the Emergency Relief Appropriation Act of 1935, and to the Executive Orders of the President issued pursuant thereto, and to the Rules and Regulations prescribed by the President of the United States, the Federal Emergency Administration of Public Works, and the Works Progress Administration.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

The Town Board reserves the right to waive any informalities in or to reject any or all bids. No bid will be accepted, however, except with the prior approval of the State Director, Federal Emergency Administration of Public Works.

THURSTON B. KENYON,
Town Clerk.

Dated: October 25, 1935
SOLOMON & KEIS,
Consulting Engineers,
257 Broadway,
Troy, N. Y.

Bids: November 12.

Building

Memphis, Tenn.

Sealed proposals for constructing a third story addition to the Maternity Ward Building of the John Gaston Hospital in the City of Memphis, State of Tennssee, from a Federal Emergency Administration of Public Works Grant,

P.W.A. Docket No. Tenn. 1116,

will be received by the City Commission of the City of Memphis, Tennessee, at the office of D. C. Miller, City Clerk, Room 204 Court House, Memphis, Tennessee, until 2:30 p.m., Tuesday, November 12, 1935, and will be opened and read publicly.

Copies of the proposal, contract documents, drawings and specifications may be obtained from the office of W. B. Fowler, City Engineer, Room 119 Court House. No charge or deposit will be required of eligible bidders for procuring plans and specifications.

Each bid must be accompanied by a certified check or bidder's bond executed by the Bidder and a Surety Company, satisfactory to the Public Works Administration, in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be entered into and the performance of it properly secured. The successful bidder will be required to execute a labor bond as required by P.W.A.

Proposal form must be properly filled out and must not be detached from specifications.

All bidders must be licensed contractors as required by Chapter 70, of the Public Acts of 1931, of the General Assembly of the State of Tennessee, Section 1. Bidder's name and license number must be placed on the envelope containing these documents.

WAGES: Attention is called to the fact that no less than the minimum wage rates as set up in the specifications must be paid on this project, as prescribed by the City of Memphis, Tennessee, and approved by the Acting State Director for the State of Tennessee.

WITHDRAWAL OF BIDS: Unless c trary to statutes of the State of Tenness including local charter provisions, no b der may withdraw a bid submitted for period of thirty days after the date set the opening of such bids.

In bidding on projects financed in part in whole with P.W.A. funds, the bidd MUST execute the certificate that he fu understands the penalty clause as set in Penalty for False Certification inclu in the specifications.

All work executed and all materials fu nished shall conform to the Rules and R ulations of the Federal Emergency Adm istration of Public Works.

This project is being financed from fun to be furnished by the United States G ernment, and failure of the City of Memp to receive the requisite funds from t Government, relieves said City and its o cials and representatives from any respo sibility, damage or loss due to the taki of bids.

The funds available for construction purposes of this project are $40,088.00.

The City reserves the right to reject any and/or all bids, and to waive informaliti therein.

WATKINS OVERTON, Mayor.
ATTEST:
D. C. MILLER, City Clerk.

U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935.—Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 2 1935, for furnishing all labor and materials and performing all work for the *construction of the U. S. P. O. at Canton, N. Y.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (189)

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935. —Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 19, 1935, for furnishing all labor and materials and performing all work for *construction of the completion of Bird House at the National Zoological Park, Washington, D. C.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin No. 51 (revised) of the Federal Emergency Administration of Public Works as modified by the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications must be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $7 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposal. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, Chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (188)

Bids: November 12.

Borings and Pile Tests

TRIBOROUGH BRIDGE AUTHORITY
New York City.

Sealed bids will be received by Triborough Bridge Authority at its office, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y., until 11 o'clock Eastern Standard Time on the morning of Tuesday, November 12, 1935, for Borings and Pile Tests, Grand Central Parkway Extension, 100th Street to Northern Boulevard, Queens Connection of the Triborough Bridge connecting the Boroughs of Manhattan, Bronx and Queens, Contract No. 55.

A more complete description of the work and full information for bidders is given on the drawing and in other contract papers which may be seen at the office of the Chief Engineer, Triborough Engineer Authority, Room 1537, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y.

As provided in the "Information for Bidders," each bid must be accompanied by a deposit in the amount of at least five (5%) per cent of the estimated total contract price as shown in the Schedule of Prices in the "Proposal."

The security for the faithful performance of the work shall be in the form of a surety bond in the penal sum of the estimated total contract price as shown in the Schedule of Prices in the "Proposal." Such bond shall be executed by a duly authorized surety company as surety.

The work called for by this proposal is to be financed wholly from monies obtained by loan and grant from the Federal Emergency Administration of Public Works and is subject to the provisions of Title II of the National Industrial Recovery Act and to the rules and regulations prescribed by the President of the United States or the Administrator of the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirement as to the minimum wage rates to be paid under this contract, as well as to other provisions set forth in "Information for Bidders."

No bidder may withdraw his bid within thirty (30) days after the opening of bids.

Blank forms for proposals, information for bidders, contract, bond and specifications may be obtained at the office of the Assistant Chief Engineer, Room 1537, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y. Arrangements will be made whereby prospective bidders desiring prints of the contract drawing for their own use may secure same, the cost thereof ($0.24 per print) to be paid by them.

PAUL LOESER, Director.
Dated: October 24, 1935.

Bids: November 14.

Southwest Sewage Treatment Works, Division M

THE SANITARY DISTRICT OF CHICAGO

Sealed proposals, endorsed, "PROPOSAL FOR SOUTHWEST SEWAGE TREATMENT WORKS, DIVISION M", will be received by the Clerk of The Sanitary District of Chicago at the office of said Sanitary District, Room 600, 910 South Michigan Avenue, Chicago, Illinois, until 1:30 p.m. Central Standard time on Thursday, November 14, 1935, and will be opened publicly by the Board of Trustees of said Sanitary District at a meeting to be held on that day or at the first meeting thereafter.

The work for which tenders are invited is Division M; Structural Steel for the Superstructure of the Pump and Blower House. This work consists of furnishing, fabricating, and erecting structural steel.

The site for the Southwest Sewage Treatment Works is to the southwest of the Sanitary District's West Side Sewage Treament Works in the southeastern portion of the Village and Township of Stickney, County of Cook, State of Illinois.

All bids must be made upon blank forms of proposal furnished by the Sanitary District, and shall be made in accordance with and conform to the terms and conditions set forth in "Requirements for Bidding and Instructions to Bidders" attached thereto.

Specifications, form of proposal and plans may be obtained upon deposit of Fifteen Dollars ($15.00) at the office of said Sanitary District, which sum so deposited will be refunded if said plans and specifications are returned in good condition within thirty days following the opening of bids.

Each proposal must be accompanied by cash or a cashier's check on a responsible bank doing business in the City of Chicago, to the amount of Five Thousand ($5,000.00) payable to the order of the Clerk of The Sanitary District of Chicago.

This work is under the supervision of the Federal Emergency Administration of Public Works and all provisions of Bulletin No. 2 (Revised March, 1935) must be strictly complied with, said provisions including in part, minimum hourly wage rates of $1.20 for skilled and 50 cents for unskilled labor and excepting therefrom any provisions relating to NRA.

The Board of Trustees of said Sanitary District reserves the right to reject any or all proposals.

THE SANITARY DISTRICT
OF CHICAGO
By ROSS A. WOODHULL,
Chairman of Its Committee on Finance.
Attest:
JAMES J. SULLIVAN,
Clerk.
Chicago, October 24, 1935.

Bids: November 12.

Bulkhead Wall

TRIBOROUGH BRIDGE AUTHORITY
New York City.

Sealed bids will be received by Triborough Bridge Authority at its office, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y., until 11 o'clock Eastern Standard Time, on the morning of Tuesday, November 12, 1935, for the Bulkhead Wall along East River Drive from East 119th Street to East 124th Street, Manhattan Connection of the Triborough Bridge connecting the Boroughs of Manhattan, Bronx and Queens, Contract No. 41.

A more complete description of the work and full information for bidders is given on the drawing and in other contract papers which may be seen at the office of the Chief Engineer, Triborough Bridge Authority, Room 1537, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y.

As provided in the "Information for Bidders," each bid must be accompanied by a deposit in the amount of at least five (5%) per cent of the estimated total contract price as shown in the Schedule of Prices in the "Proposal."

The security for the faithful performance of the work shall be in the form of a surety bond in the penal sum of the estimated total contract price as shown in the Schedule of Prices in the "Proposal." Such bond shall be executed by a duly authorized surety company as surety.

The work called for by this proposal is to be financed wholly from monies obtained by loan and grant from the Federal Emergency Administration of Public Works and is subject to the provisions of Title II of the National Industrial Recovery Act and to the rules and regulations prescribed by the President of the United States or the Administrator of the Federal Emergency Administration of Public Works.

Attention of bidders is particularly called to the requirement as to the minimum wage rates to be paid under this contract, as well as to other provisions set forth in "Information for Bidders."

No bidder may withdraw his bid within thirty (30) days after receipt thereof.

Blank forms for proposals, information for bidders, contract, bond and specifications may be obtained at the office of the Assistant Chief Engineer, Room 1537, 111 Eighth Avenue, Borough of Manhattan, New York City, N. Y. Arrangements will be made whereby prospective bidders desiring sets of prints of the contract drawings for their own use may secure same, the cost thereof ($1.08) to be paid by them.

PAUL LOESER, Director.
Dated: October 24, 1935.

Bids: November 20.

Buildings

Oklahoma City, Okla.

Sealed bids will be received by the City of Oklahoma City, Oklahoma, up to 9:30 o'clock a.m., November 20, 1935 for the:

Construction of a
CITY HALL BUILDING
Construction of a
JAIL BUILDING

FOR SAID CITY, according to plans and specifications, prepared by The Allied Architects of Oklahoma City, Architects, on file and obtainable in the office of the City Clerk of the City of Oklahoma City.

Bids will be taken separately upon each building.

The plans and specifications may be obtained for each building from the City Clerk. A deposit of Fifty ($50.00) dollars with the City Treasurer of said City will be required on each set of plans and specifications and the said deposit or deposits will be refunded upon return of said plans and specifications on or before November 30, 1935. Said deposit or deposits shall be either cash or cashier's check made payable to the City of Oklahoma City.

The original bid or bids shall be filed with M. Peshek, Jr., City Clerk, duplicate with F. G. Baker, City Auditor and triplicate with O. M. Mosier, City Manager. The original bid or bids will be opened and considered by the City Council in the Council Chamber in the City Hall Building at 9:30 o'clock a.m., November 20, 1935.

All work done under any contract which may be let as a result of this request for bids must be done in accordance with instructions contained in "Construction Conditions," "Construction Regulations," and regulations issued pursuant to so-called "Kick-back Statute," as set out in rules and regulations relating to Applicants and Projects under the Emergency Relief Appropriation Act of 1935.

All contractors bidding on this work shall be examined as to their qualifications prior to the opening of bids. Experience and Financial Questionnaires will be furnished upon request, to any contractor by the Acting State Director, PWA, 212 Federal Building, Oklahoma City, Oklahoma.

Wages to be paid on these projects have been established by the Owner and approved by the Acting State Director, PWA, and appear in the specifications under "Instruction to Bidders."

The original bid or bids filed with the City Clerk must be accompanied by a certified check or bidder's bond in the sum of five (5) per cent of the amount of the bid or bids as a guarantee that the successful bidder will, within five (5) days after the contract or contracts are awarded to him, enter into written contract and furnish surety bonds as required by Oklahoma Statutes and PWA regulations.

No bidder shall withdraw his bid, bid check or bidder's bond for a period of thirty (30) days after the date set for the opening thereof. Checks or bid bonds, of three low bidders will be retained until aproval of contract and execution of satisfactory bond by the successful bidder.

Each bidder shall accompany his bid or bids and the copies thereof, with a sworn statement in writing that the bidder has not, directly or indirectly, entered into any agreement, express or implied, with any bidder or bidders, having for its object the controlling of the price or amout of such bid or any bids, the limiting of the bids or bidders, the parcelling or farming out to any bidder or bidders or other persons of any part of the contract or any part of the subject matter of the bid or bids or of the profits thereof, and that he has not and will not divulge the sealed bid to any person whatever, except those having a partnership or other financial interest with him in said bid or bids, until after the said sealed bid or bids are opened.

The City Council of the City of Oklahoma City, Oklahoma, and the Acting State Engineer, PWA, reserve the right to reject any or all bids.

M. PESHEW, JR.
City Clerk.
(SEAL)

Notice to Contractors

Contractors are advised that we will soon advertise for the following work:

266 miles of Irrigation Canals	13,000,000 cu.yds.
2 Earth Dams	5,000,000 cu.yds.
2 Tunnels through earth, lined with concrete....	20,000 Ft.
3 Platte River Diversions	
3 Power Houses	
3 Hydro Electric Units, Total	32,000 Kw.
250 miles Transmission Lines	
Concrete Work, and Bridges	

Initial P.W.A. Allotment. $10,000,000.00
Total Cost of Project..... $20,000,000.00

The work must be contracted by December 15, 1935, and completed in one year. Contractors are invited to examine this work immediately, and advise us as to the sections of work that they are equipped to complete in a one year construction period.

CENTRAL NEBRASKA PUBLIC POWER
AND IRRIGATION DISTRICT.
By GEO. E. JOHNSON,
Chief Engineer and General Manager,
Hastings, Nebraska.

OFFICIAL PROPOSALS

Bids: November 19.

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS

DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, Albany, N. Y., until one o'clock p.m. on Tuesday, November 19, 1935, for the construction and reconstruction of highways and bridges in the following counties, in accordance with the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11—74th Congress)

County	Deposit Required
Construction	
KINGS (Prelim. Grad & Structures: 1.11 miles.)	$8,000
ORLEANS (18′ Gravel-Calcium Chlo. Treat: 2.76 miles.)	1,800
STEUBEN (Creos. timber trestles 6—17′ spans & 3—17′ spans 20′ & 24′ concrete slabs 3 closed boxes: 12′x4′, 16′x4½′; & 16′x10′:)	3,500
WESTCHESTER (46′ opt. conc. 8″ or 9″ incl. 74′ 4″ rigid frame masonry-faced Arch: 0.22 mile.)	7,500
Reconstruction	
CAYUGA (20′ M.M. Type 3: 0.73 mile.)	2,400
CORTLAND (I-Beam 2—40′ spans; 55′ I-Beam; Concrete & M.M. Type 3 Approach: 0.18 mile.)	3,000
HERKIMER (20′ & Var. Concrete: 0.63 mile.)	4,000
MADISON & ONEIDA Cons. & Recons. (75′ Girder Conc. Appr.: 0.09 mile.)	2,000
SCHOHARIE (60′ Girder M.M. 4 Appr.: 0.11 mile.)	1,400
TOMPKINS (21′ slab 80′ Girder MM. 3 Appr.: 0.25 mile.)	2,200

Maps, plans, specifications, and estimates may be seen and proposal forms obtained at the office of the Division of Highways in Albany, N. Y., and at the office of the District Engineers in whose district the roads are located, upon the payment of Five Dollars ($5.00) for plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Bldg., Worth & Center Streets, New York City. No refund will be made on plans, specifications or proposal forms. The addresses of the District Engineers and Counties in each district will be furnished upon request.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions covering sub-letting or assigning the contract and to the use of domestic materials, when let under the rules and regulations for carrying out the provisions of the Emergency Relief Appropriation Act of 1935 (Public Resolution No. 11-74th Congress) for the purpose of providing employment and hastening industrial recovery.

Proposal for each highway or contract must be submitted in a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the New York State Department of Public Works, Division of Highways, for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Subdivision 2 of Section 130 of the Highway Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Sec. 130 of the Highway Law, as amended. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten percentum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance to the Highway Law, the amount of the bidding check will be returned when fifteen percentum of the contract work has been completed.

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows:

In New York City: Skilled Labor, eighty cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Nassau, Rockland, Suffolk and Westchester;—Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty cents per hour; Unskilled Labor, fifty-five cents per hour; in the Counties of Dutchess, Orange, Putnam, Ulster & Sullivan, seventy-five cents per hour for Skilled Labor; Intermediate Grade Labor, Fifty-five cents per hour; Unskilled Labor, fifty cents per hour; and in all other counties other than above, Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, Forty-five cents per hour.

The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Sub-division d, of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

FRED'K STUART GREENE,
Supt. State Dept. Public Works.

U. S. Government

WAR DEPARTMENT. Office of the Constructing Quartermaster, Fort McClellan, Alabama. Sealed proposals will be received at this office until 10:00 A.M., C.S.T., November 15, 1935, and then publicly opened for the *construction of a 291-Man Barracks at this station.* Plans and specifications will be furnished upon deposit of certified check in amount of $40.00 made payable to the Treasurer of the United States. Information at the above address. (173)

Make Plans Accessible to Distant Bidders

Plans and specifications for inspection by distant bidders may be filed at any of *Engineering News-Record* offices (without charge). Or a sufficient supply may be deposited at such of our offices as seem desirable, subject to your usual requirements in the matter of deposits, etc. (We assume full responsibility for return of plans or deposits). Therefore, Contractors in all parts of the country can bid with equal convenience on contracts advertised in *Engineering News-Record.*

U. S. Government

U. S. DEPARTMENT OF AGRICULTURE, Bureau of Public Roads, Washington, D. C., October 22, 1935. Sealed bids will be received at the office of the Bureau of Public Roads, Shenandoah Life Insurance Building, Roanoke, Virginia, until 11 o'clock a.m., E.S.T., November 29, 1935, for the *construction of Project 1R1,* 9.77 miles of road in the Shenandoah Great Smoky Mountains Parkway, from Smart to Tuggle Gap, Floyd and Patrick Counties, Virginia, involving major items of 33 acres clearing and grubbing; 263,000 cu.yd. excavation; 92,000 sta.yd. overhaul; 34,750 tons crushed stone surfacing; 950 cu.yd. cement concrete; 87,000 lb. reinforcing steel; 900 cu.yd. cement stone masonry; 4,100 lin.ft. cast iron culvert pipe or reinforced concrete pipe; 4,000 lin.ft. 6-10 inch vitrified tile underdrain; 56 drop inlets; 30,000 cu.yd. stripping and storing topsoil; and 30,000 cu.yd. placing topsoil. Where plans and specifications are requested, a deposit of $10.00 cash or certified check will be required to insure their return within 15 days after opening of bids. Checks should be made payable to U. S. Department of Agriculture. Plans, specifications, and proposal forms may be obtained at the office of the Bureau of Public Roads, 1725 F Street, N. W., Washington, D. C., or the Bureau Office, Roanoke, Virginia. H. J. SPELMAN, District Engineer. (181)

PROPOSALS FOR CONCRETE BRIDGE FOUNDATIONS: U. S. Engineer Office, Box 600, Ocala, Florida. Sealed proposals will be received here until 11:00 a.m., November 11, 1935, and then opened, for *constructing concrete bridge foundations* at the intersection of U. S. Highway No. 441 and the right-of-way of the Atlantic-Gulf Ship Canal, near Santos, about five miles southeast of Ocala, Florida. The work will consist of approximately 1,000 cubic yards of rock excavation, 6,600 cubic yards of earth excavation, and the construction of piers, abutments and pedestals containing approximately 5,400 cubic yards of concrete and 138,000 pounds of reinforcing steel. Information on application. $2.00 charge for each set of specification drawings. (1715)

WAR DEPARTMENT. Office of the Constructing Quartermaster, Fort McClellan, Alabama. Sealed proposals will be received at this office until 2:00 P.M., C.S.T., November 15, 1935, and then publicly opened for the *construction of Bachelor Officers' Quarters and Mess at this station.* Plans and specifications will be furnished upon deposit of certified check in amount of $25.00 made payable to the Treasurer of the Untied States. Information at the above address. (174)

U. S. ENGINEER OFFICE, Jacksonville, Fla.—Sealed bids, in duplicate, will be received here until 2:00 p.m., November 5, 1935, and then publicly opened, for furnishing all labor and materials and performing all work for *construction of Taylor Creek hurricane gate No. 6 and culvert spillway and north shore drainage culverts Nos. 6, 7, 8 and 9 on Lake Okeechobee near Okeechobee City, Fla.* Further information on application. (1711)

U. S. ENGR. OFFICE, 13TH FLOOR, CUSTOMHOUSE, BOSTON, MASS.—Sealed bids will be received here until 12 M. November 5, 1935, and then opened, for *dredging and removal of bridge piers on both sides of Cape Cod Canal in Bourne, Mass.* Further information on application. (1710)

U. S. ENGR. OFFICE, 13TH FLOOR CUSTOMHOUSE, BOSTON, MASS.—Sealed bids will be received here until 12 M. November 12, 1935, and then opened, for *excavation and revetment on south side Cape Cod Canal* between Stations 325 and 391 in Bourne, Mass. (178)

U. S. ENGINEER OFFICE HUNTINGTON, W. VA.—Sealed bids will be received here until 11:00 A.M. (E.S.T.), November 15, 1935, and then opened, for *furnishing and delivering seven emergency bulkhead units for Gallipolis Dam, Ohio River.* Further information on application. (177)

U. S. ENGINEER OFFICE, Pittsburgh, Pennsylvania. Sealed bids will be received here until 1:30 o'clock P. M. (Eastern Standard Time) November 13, 1935, and then publicly opened for *furnishing and delivering a steel hull pusher boat.* Information on application. (161)

Bids: November 21.

Southwest Sewage Treatment Works

FURNISHING AND DELIVERING
STEAM TURBINE DRIVEN GENERATOR UNITS—DIVISION "I"
CONDENSING EQUIPMENT FOR STEAM TURBINE DRIVEN GENERATOR UNITS —DIVISION "J"
FEEDWATER HEATING EQUIPMENT— DIVISION "K"
POWER TRANSFORMERS— DIVISION "L"
THE SANITARY DISTRICT OF CHICAGO

Sealed proposals, endorsed "PROPOSALS FOR SOUTHWEST SEWAGE TREATMENT WORKS, DIVISIONS I, J, K and L," will be received by the Clerk of The Sanitary District of Chicago, at the office of said Sanitary District, Room 600, 910 South Michigan Avenue, Chicago, Illinois, until 1:30 p.m. Central Standard Time, on Thursday, November 21, 1935, and will be opened publicly by the Board of Trustees of said Sanitary District at a meeting to be held on that day or at the first meeting thereafter.

The work for which tenders are invited includes the following Divisions for furnishing and delivering of equipment as specified, f.o.b. cars, at the Southwest Sewage Treatment Works in the Village of Stickney, Cook County, Illinois:

DIVISION "I"

STEAM TURBINE DRIVER GENERATOR UNITS

This includes furnishing and delivering two (2) Steam Turbine Driven Generator Units, each with a rated capacity of 5,000 kva. at 80 per cent power factor, complete with auxiliary equipment, appurtenances and accessories.

DIVISION "J"

CONDENSING EQUIPMENT FOR STEAM TURBINE DRIVEN GENERATOR UNITS

This includes furnishing and delivering two (2) units of steam condensing equipment, each unit including a condenser having not less than 5,500 square feet of effective surface, complete with auxiliary equipment, appurtenances and accessories.

DIVISION "K"

FEEDWATER HEATING EQUIPMENT

This includes furnishing and delivering nine (9) low pressure heaters, one (1) deaerating heater, one (1) double effect evaporator with feed deaerating type heater, and evaporator condenser, complete with auxiliary equipment, appurtenances and accessories.

DIVISION "L"

POWER TRANSFORMERS

This includes furnishing and delivering six (6) 1667 Kva., 60 cycle, single phase, oil insulated, self-cooled, outdoor, power transformers, complete with appurtenances.

The site of the Southwest Sewage Treatment Works is situated immediately west of the Sanitary District's West Side Sewage Treatment Works, located west of 52nd Avenue, south of West Pershing Road and north of the right of way of the Chicago and Illinois Western Railroad in the Village of Stickney, Cook County, Illinois.

Proposals may be made on one division or all divisions, complete, but not on any part of one division.

All bids must be made on blank forms of proposals furnished by the Sanitary District, and shall be made in accordance with and conform to all of the terms and conditions set forth in "Requirements for Bidding and Instructions to Bidders" attached thereto.

Specifications, forms of proposals and general plans may be obtained at the office of said Sanitary District upon deposit of Ten Dollars ($10.00), which sum so deposited will be refunded if said plans and specifications are returned in good condition within thirtry (30) days following the opening of the bids.

Each proposal must be accompanied by cash or a cashier's check or a certified check on a responsible bank doing business in the City of Chicago, to the amount or amounts as follows:

DIVISION "I"—Steam Turbine Driven Generator Units — Ten Thousand Dollars ($10,000.00).
DIVISION "J"—Condensing Equipment for Steam Turbine Driven Generator Units —Five Thousand Dollars ($5,000.00).
DIVISION "K" — Feed Water Heating Equipment—Three Thousand, Five Hundred Dollars ($3.500.00).
DIVISION "L"—Power Transformers— Two Thousand, Five Hundred Dollars ($2.500.00).

All cashier's checks or certified checks shall be made payable to the order of the Clerk of The Sanitary District of Chicago.

This work is under the supervision of the Federal Emergency Administration of Public Works and all provisions of Bulletin No. 2 (Revised March, 1935), must be strictly complied with, including minimum hourly wage rates for skilled and unskilled labor prescribed by the Administrator for the zone or zones in which the work is to be done, excepting therefrom any provisions relating to N.R.A., viz.:

Northern Zone:	
Skilled labor	$1.20
Unskilled labor	.50
Southern Zone:	
Skilled labor	$1.00
Unskilled labor	.40
Central Zone:	
Skilled labor	$1.10
Unskilled labor	.45

The Board of Trustees of The Sanitary District of Chicago reserves the right to reject any or all proposals.

THE SANITARY DISTRICT OF CHICAGO
By ROSS A. WOODHULL,
Chairman of Its Committee on Finance.
ATTEST:
JAMES J. SULLIVAN, Clerk.
Chicago, October 29, 1935.

Bids: November 19.

Sewage Treatment Plant

New Brunswick, N. J.

Separate and independent sealed proposals for the construction of a sewage treatment plant, pumping stations, collecting sewers and appurtenances will be received by the Board of Commissioners at the City Hall, 78 Bayard Street, New Brunswick, N. J., at ten o'clock a.m., Tuesday November 19th, 1935, and then publicly opened for each of the following divisions of work:

1. General contract and equipment
2. Furnishing and Placing Structural Steel
3. Plumbing
4. Heating
5. Lighting
6. Collecting sewers.

The project is financed in whole or in part by the Federal Emergency Administration of Public Works and is subject to all of its requirements.

The attention of bidders is called to the minimum rates of wages to be paid by contractors in accordance with the specifications.

All contracts and sub-contracts are subject to the approval of the Government Engineer.

Attention of prospective bidders is further directed to paragraph No. 1 of construction regulations included in the specifications. The office of the United States Employment Service, which may be called upon for lists of qualified workers, is at the corner of State and Market Streets, Perth Amboy, New Jersey and/or the New Jersey State Employment Service which is affiliated with the United States Employment Service at the corner of George and Albany Streets, New Brunswick, N. J.

Every proposal must when submitted, be enclosed in a sealed envelope, stating, specifically the branch of the work upon which the bid is being made.

No proposal will be accepted unless accompanied by a certified check for 5 per cent (5%) of the amount of the proposal, made payable to the City Treasurer of the City of New Brunswick, N. J., and drawn upon national or state banks or trust companies satisfactory to the city. Proposals must be on the forms prescribed by the city.

All such deposits except the successful bidder or bidders will be returned to the person or persons making same within 60 days after the opening of the bids.

The successful bidder will also be required to furnish a surety company bond to the City of New Brunswick in the full amount of his bid for the faithful performance of the work to be done said contract.

Plans, specifications, proposal forms, forms of contract and forms of bond may be obtained by prospective bidders upon depositing $25 per set at the office of the City Engineer, City Hall, New Brunswick, N. J. This money will be returned in full upon return of the said plans and specifications to the above office.

The lowest bids of responsible contractors will govern the award. In determining the lowest responsible bid the following elements will be considered: Whether the bidder involved (a) maintains a permanent place of business; (b) has adequate plant equipment to do the work properly and expeditiously; (c) has a suitable financial status to meet obligations incident to the work; (d) has appropriate technical experience.

The right to reject any or all bids is reserved by the Board of Commissioners of the City of New Brunswick.

Frederick F. Richardson, Mayor.
Attest:
John F. Boyce,City Clerk.
Approved:
Thomas H. Hagerty, City Attorney.
Asher Atkinson, City Engineer.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Washington, D. C., October 23, 1935. Sealed bids (Specifications No. 630, Readvertisement) will be received at the office of the U. S. Bureau of Reclamation, Casper, Wyoming, until 10 o'clock a.m., Mountain standard time, November 26, 1935, and will at that hour be opened for furnishing labor and materials and performing all work for the *construction of the Seminoe dam and power plant*, Casper-Alcove project, Wyoming. The work is located on the North Platte river about 37 miles northeast of Parco, Wyoming. The principal items of work and the estimated quantities involved are as follows: 606,000 cubic yards of all classes of open-cut excavation; 22,000 cubic yards of tunnel excavation; 700 cubic yards of gravel road surfacing; 3,000 cubic yards of back fill; 1,000 cubic yards of riprap; 400 cubic yards of rubble masonry; 189,680 cubic yards of concrete; 90 cubic yards of porous concrete; 34,600 cubic feet of pressure grouting; drilling 30,400 linear feet of grout; drainage, weep, and anchor bar holes; placing 2,550,000 pounds of reinforcement bars and fabric; constructing 260 linear feet of 4-inch to 6-inch diameter sewer pipe drains; constructing 800 linear feet of 4-inch diameter split sewer pipe drains; manufacturing and placing 7,000 linear feet of porous concrete drain tile; installing 397,000 pounds of metal pipe, tubing, and fittings; installing 365,000 pounds of power penstocks and outlet pipes; installing 1,535,000 pounds of needle valves and miscellaneous metalwork; installing 1,002,000 pounds of gates and appurtenances; installing 180,000 pounds of structural bridge steel; installing 13 M. ft. b.m. of bridge timbers; installing 11,600 linear feet of metal sealing strips; installing 8,400 square feet of asphalt-saturated-felt roofing; installing 25,700 linear feet of electrical conduit; installing 10,000 linear feet of electrical cable for testing apparatus; furnishing, installing, and operating a concrete cooling plant; and transporting 30,000 hundredweight of freight for the Government. This invitation for bids does not cover the purchase of materials which are to be furnished by the Government. Materials to be furnished by the contractor, and those furnished by the Government are described in the specifications which will be a part of the contract. The work shall be commenced within thirty (30) calendar days after date of receipt of notice to proceed and shall be completed within one thousand one hundred and fifty (1,150) calender days from the date of receipt of such notice. Liquidated damages for delay will be two hundred and fifty dollars ($250) per day. Bid security 10 per cent and performance bond 50 per cent will be required. The charge for copies of the specifications and drawings is $5.00 per copy, not returnable. For particulars, address the Bureau of Reclamation, Casper, Wyoming; Denver, Colorado; or Washington, D. C. ELWOOD MEAD, Commissioner. (1820)

WAR DEPARTMENT. Office of the Constructing Quartermaster, Fort McClellan, Alabama. Sealed proposals will be received at this office until 10:00 A.M., C.S.T., November 14, 1935 and then publicly opened for the *Construction of Enlisted Men's Service Club, Gymnasium, and Assembly Hall Wing at this station.* Plans and specifications will be furnished upon deposit of certified check in amount of $30.00 made payable to the Treasurer of the United States. Information at the above adress. (171)

OFFICIAL PROPOSALS

Bids: November 21.

Water Main

Nyack, N. Y.

Sealed bids will be received at the office of the Board of Water Commissioners, Village of Nyack, New York, until eight o'clock P.M., Eastern Standard Time, on the twenty-first day of November, 1935.

The work to be done includes furnishing all materials and labor, tools, plant and equipment necessary for constructing a twelve (12") inch cast iron water main approximately four thousand (4,000') feet in length, including approximately nine hundred (900') feet on pile bents, together with valves, fittings, connections to existing mains and other appurtenances, all in accordance with plans and specifications prepared by Nicholas S. Hill, Jr., Consulting Engineer, 112 East 19th Street, New York City.

More complete advertisement, plans and specifications may be obtained either from the office of the Board of Water Commissioners or from the Consulting Engineer upon deposit of Five ($5.00) Dollars (refunded upon return of plans and specifications in good condition).

Each proposal must be accompanied by a certified check or bid bond in amount equal to Fifteen (15%) per cent of the proposal.

WILLIAM B. PAGE,
Mayor.
JAMES J. TWOMEY,
President.
EDWARD L. RUSSELL,
JOSEPH L. CLUCAS,
Board of Water Commissioners
Village of Nyack, N. Y.
NICHOLAS S. HILL, JR.,
Consulting Engineer.

U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 22, 1935. —Sealed bids in duplicate will be publicly opened in this office at 1 p.m., Nov. 25, 1935, for furnishing all labor and materials and performing all work for the construction (except elevators) of the *Extension to the U. S. Archives Bldg. at Wash., D. C.* Attention is directed to the special conditions of bidding set forth in the specifications, and bulletin 51 (revised) of the Federal Emergency Administration of Public Works. Upon application, 2 sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $15 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Works Branch. (1819)

U. S. ENGINEER OFFICE, P. O. Box 59, Louisville, Ky.—Sealed bids will be received until 2:00 p.m. (C.S.T.), November 12, 1935, and then opened, for *constructing and delivering afloat at Paducah, Ky., three* 45 *foot welded steel hull Diesel engine survey boats.* Further information on application. (168)

U. S. Government

PROCUREMENT DIVISION, Public Works Branch, Washington, D. C., Oct. 21, 1935.—Sealed proposals in duplicate will be publicly opened in this office at 1 p.m., Nov. 20, 1935, for furnishing all labor and materials and performing all work for the *construction of the U. S. C. G., Air Station at Miami, Fla.* Attention is directed to the special conditions of bidding set forth in the specification. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $10 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer of the U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any subcontractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. REYNOLDS, Assistant Director of Procurement, Public Works Branch. (1814)

WAR DEPARTMENT. Office of the Constructing Quartermaster For McClellan, Alabama. Sealed proposals will be received at this office until 10:00 A.M., C.S.T. November 6, 1935 and then publicly opened for the *construction of Truck Park and Repair Shop (National Guard Camp) at this station.* Plans and specifications will be furnished upon deposit of certified check in amount of $15.00 made payable to the treasurer of the United States. Information at the above address. (167)

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GRADUATE civil engineer, 22, now employed, experience surveying and drafting, would like additional experience. Own transit and equipment. Travel anywhere. PW-142, Engineering News-Record, 330 West 42d Street, New York City.

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November 7th issue of

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close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

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Display and Undisplayed Ads: Friday, November 1st

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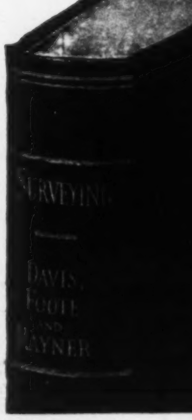

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